FURTHER CLARIFICATION OF INTERPERSONAL VERSUS SOCIAL VALUES CONFLICT: INSIGHTS FROM MOTORIZED AND NON-MOTORIZED RECREATIONAL RIVER USERS

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Abstract

This study examined interpersonal and social values conflict among motorized and non-motorized recreational river users within the Chena River State Recreation Area in interior Alaska. This work was undertaken in order to evaluate differences in research methodologies and to provide state park managers with information concerning the type and level of conflict among recreational rivers users and potential management strategies. Previous methodologies for operationalizing social values conflict are not conceptually clear and may result in individuals being classified into the wrong conflict typology. This study addressed these conceptual problems by: 1) introducing a new conflict typology to differentiate between social values conflict and latent problem behaviors and 2) by uniformly applying a non-behavior based measure to classify social values conflict. Data were collected using an on-site survey provided to motorized (n = 26) and non-motorized (n = 63) recreational river users at multiple put-in/take-out locations. To the extent conflict existed, social values conflict was the most prevalent. A small but perceptible number of respondents in both user groups reported a latent-behavior conflict. Based on these data, results generated using the methods in this study were compared to the results generated using previous methodologies. Differences were found between the number of non-motorized respondents who were classified into the no conflict and social values conflict typologies. Based on the results, a combination of management strategies such as education and outreach and alternative infrastructure development should be used to reduce conflict among users.

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Glossary of Terms

Interpersonal Conflict – conflict based on an undesirable behavior that occurs when two or more recreational users directly interact.

Social Values Conflict – conflict based on differences in norms and/or values with no nexus to undesirable behaviors or the direct interaction between recreational users.

Interpersonal and Social Values Conflict – conflict between recreational users who experience both interpersonal and social values conflicts.

Latent-behavior Conflict – describes a person that does not perceive a conflict with the general activity of another, but rather feels specific behaviors, which they personally did not encounter, are a problem.

Perceived Conflict – a perception that a particular situation/behavior or the presence of an incompatible use type is contributing to a conflict situation.

CHAPTER 1 - Introduction

1. Thesis Description

During the process of updating the Chena River State Recreation Area (CRSRA) Management Plan in 2003-2004, a proposal to restrict motorized use on the upper Chena River raised questions about the extent of river uses and potential conflict between motorized and non-motorized users. Public comments on the issue were polarized. Some supported restrictions citing safety concerns, resource damage, and incompatible use, while others strongly opposed restrictions in an area with a long history of motorized use. It became clear that more information about general river use and conflict would be required before specific management objectives concerning motorized river use could be developed. The final management plan adopted by Alaska State Parks in 2006 recognized that conflict between motorized and non-motorized river users may exist but decided that, "…there is insufficient information about the nature and level of conflicts to develop specific management objectives or restrictions" and that "initial data gathering should identify the existing use levels and type of use and type of conflict" (Alaska Department of Parks and Recreation, 2006, p. 21).

This work examines the type of conflict among river recreational users in the CRSRA including anglers, motorized boaters, and non-motorized boaters. In this thesis, I summarize the origins and evolution of conflict-related research as applied to outdoor recreation in Chapter 1, describe my study and findings as published in a peer-reviewed journal in Chapter 2, discuss the implications of this work and recommendations for management in Chapter 3, and present general conclusions in Chapter 4.

1.1. Evolution of Outdoor Recreation Research

Outdoor recreation and conflict has been the subject of empirical research for over 50 years (Lucus, 1964; Hidalgo & Harshaw, 2010). Interest in the subject began after World War II when issues like crowding and the environmental impacts associated with outdoor recreation became a matter of deep concern for members of Congress, state legislators, other public leaders, and many private citizens and organizations (Clawson, 1959). During the 1950's, a thriving economy, rapid population growth, increased leisure time, improvements in transportation, and other social factors fueled a dramatic and sustained increase in demand for natural resources as well as outdoor recreation opportunities (Manning, 1999). Congress, state leaders, and conservation groups took notice of these trends and the impacts that competing land uses and budget priorities had on the supply of outdoor recreation resources (Siehl, 2008). As a result, Congress enacted Public Law 85-470, which established the Outdoor Recreation Resources Review Commission (ORRRC) to look into the demands on outdoor recreation resources and how future policies and programs could meet present and future needs. Outdoor recreation was starting to be viewed as a limited and valued resource to be studied and managed like more traditional natural resources uses such as timber, range land, and minerals. It has been said that the beginning of serious social scientific study of outdoor recreation began with the establishment of the ORRRC (Manning, 1999). Indeed, with the establishment of the ORRRC research to enhance our understanding of outdoor recreation began to flourish.

1.2. Early Conflict Research

Conflict was one of the first topics to be explored during the evolution of outdoor recreation research. Early research was descriptive in nature and primarily focused on a density dependent notion of conflict that emphasized incompatibility between uses and competition over

resources (Devall & Harry, 1981; Bury, Holland, & McEwen, 1983). The density dependent notion of conflict was closely related to how crowded people felt and focused more on the dissonance between different user groups sharing the same space rather than the reasons underlying why a conflict situation may exist. Studies analyzed multiple competing activities and often revealed substantial conflict between different user groups. For example, canoeists in the Boundary Waters Canoe Area were found to dislike meeting motor boaters but did not mind seeing other canoers (Lucas, 1964). Other activities studied include: hikers and stock users (Stankey, 1973); motorized rafters and oar-powered rafters (Shelby, 1980); and anglers and water skiers (Gramann & Burdge, 1981).

A distinctive finding among many of these studies was the asymmetrical or one way nature to the conflict (Jackson & Wong, 1982). A study conducted in Minnesota, for example, found that cross country skiers disliked their encounters with snowmobilers, but snowmobilers did not mind their encounter with skiers (Knopp & Tyger, 1973). The asymmetrical nature to conflict in these early studies revealed that if only one user group experiences conflict, then competition over scare resources cannot be the sole reason that conflict exists (Hammitt, 1989).

1.3. Goal Interference (Interpersonal Conflict)

Eventually, research began to shift away from the density dependent notion of conflict and towards a more theoretical approach. Given the number of studies (Adelman, Herberlein & Bonnicksen, 1982; Bury et al., 1983; Devall & Harry 1981; Jackson & Wong, 1982; Noe, Wellman & Buhyoff, 1982) showing little connection between the density of users and satisfaction, researchers began to place greater emphasis on the underlying reasons that precipitate a conflict situation and how they could be managed (Williams, 1993). The initial

theoretical approach that emerged was the goal interference model proposed by Jacob and Schreyer (1980).

Jacob and Schreyer (1980, p.396) defined interpersonal conflict as "goal interference attributed to another's behavior." The definition is based on the expectancy and discrepancy theories (Fishbein & Ajzen, 1975). The expectancy theory suggests that human behavior is goal oriented and that people participate in activities because they desire to achieve certain objectives. By comparing the difference between desired and achieved goals, discrepancy theory helps define the notion of satisfaction as it relates to outdoor recreation (Manning, 1999). To date, the goal interference model has provided researchers with the clearest definition of interpersonal conflict and resulted in a multitude of research on the subject (Hammitt & Schneider, 2000).

The goal interference model posits that activity style, resource specificity, mode or ways of experiencing the environment, and tolerance for lifestyle diversity are intervening variables that can be used to describe sensitivity to interpersonal conflict. For example, the more intense a person's activity style or personal meanings assigned to a particular activity are, the more likely that an interaction with a less intense participant will result in conflict. The model proposes that conflict results when the behaviors of one individual or group interferes with the goals of another. It also suggests that recreational users must have social contact, either direct or indirect for conflict to occur. Indirect contact refers to the presence or evidence of certain behaviors. Think about a cross country skier that comes across the tracks of snowmobiler but does not see or encounter the user. Direct contact refers to an encounter between users, such as, an out of control canoer who comes in contact with a jet skier on a narrow stretch of river. In theory, the degree to which the intervening variables listed above are present, the magnitude of differences

between these variables, and the amount of social contact between users can be used to predict the conditions under which recreational conflict is most likely to occur.

Interpersonal conflict has been the focus of considerable empirical research, and the theory has generally been supported (Thapa & Graefe, 2004). Studies of interpersonal conflict have been conducted on multiple activity groups that include: canoeists and motor boaters (Lucas, 1964; Adelman et al., 1982), hikers and stock users (Watson, Niccolucci, & Williams, 1993), cross-country skiers and snowmobilers (Knopp & Tyger, 1973; Jackson & Wong, 1982), oar-powered rafters and motor powered rafters (Shelby, 1980), and skiers and snowboarders (Thapa & Graefe, 2003; Vaske, Carothers, Donnelly, & Baird, 2000).

Many approaches have been used to measure interpersonal conflict. Several studies have focused on goal orientations and the role that motives play in explaining recreation conflict (Driver & Bassett, 1975; Gramann & Burdge, 1981). Others have measured encounters between users and whether or not respondents found them desirable or undesirable (Watson et al., 1993). Conflict has also been operationalized based on whether other participants interfered with or affected one's enjoyment (Watson, Williams, & Daigle, 1991; Moore, Scott & Graefe, 1998; Thapa, 1996). Another approach has been to simply ask respondents whether there are conflicts between different user groups (Schreyer, Lime, & Williams, 1984). In general, studies of interpersonal conflict have reported an increase in conflict for those recreationists for whom the interaction has negative consequences and an asymmetrical nature to the conflict (Carothers, Vaske, & Donnelly, 2001).

1.4. Social Values Conflict

Conflict can also arise between user groups that do not share the same norms and/or values (Saremba & Gill, 1991; Ruddell & Gramann, 1994). Termed social values conflict, it differs from interpersonal conflict in that it focuses on perceived conflict in the absence of direct and indirect social interaction between users. Consider for example the debate over predator control and the conflict that often results (Regelin, 2002). A person who has never witnessed a predator control activity may still philosophically disagree about the appropriateness of predator control based upon the values they hold.

1.5. Interpersonal and Social Values Conflict

Vaske, Donnelly, Wittmann, & Laidlaw (1995) introduced the theoretical distinction between interpersonal and social values conflict and provided support for the distinction in a study of conflict between hunters and non-hunters on Mt. Evans in Colorado. They hypothesized that since agency regulations and geographic conditions minimized encounters between these two groups, any conflict that did exist was more likely to be attributed to social values conflict as opposed to interpersonal conflict. The study provided respondents (hunters and non-hunters) with a series of behaviors and asked them to rate the frequency of observation and to what level they perceived them to be a problem. The individual responses were combined and used to create a conflict typology (Figure 1.1). Those who observed a given behavior and perceived it to be a problem were assigned to the interpersonal conflict group. Those who never observed a behavior but perceived it to be a problem were assigned to the social values conflict group. Results of the study indicated that to the extent conflict existed for the hunting-associated events, most of the problem was associated with differences in social values, indicating that simply knowing hunters were in the area was enough to trigger perceptions of conflict.

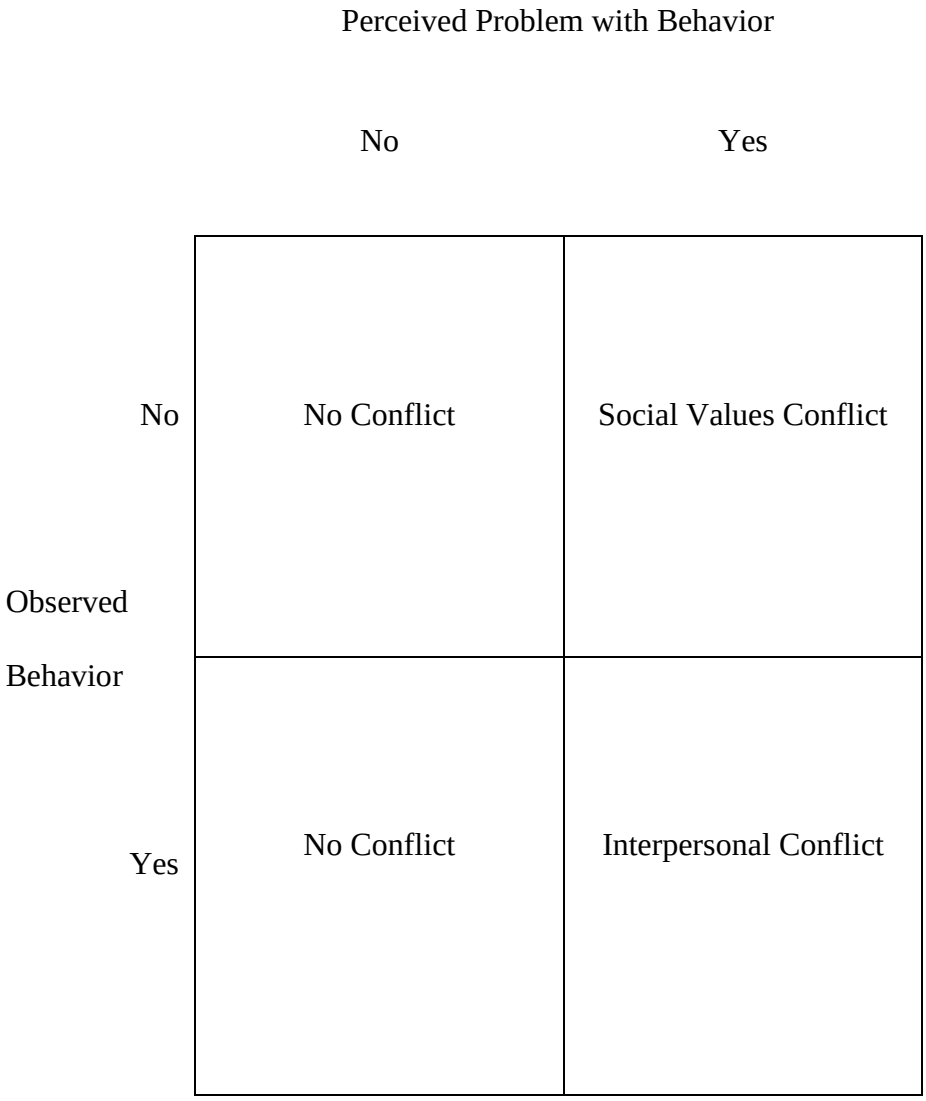

Figure 1.1. Conflict evaluation table (Vaske et al., 1995).

Carothers et al. (2001) expanded the interpersonal and social values model of conflict to hikers, mountain bikers, and dual-sport participants using the Jefferson County trail system west of Denver, CO. Their goal was to see if differences in interpersonal conflict and social values conflict could be generalized to other groups who are more similar in their value orientations. They expected that conflict was more likely to result from interpersonal rather than social values

because of the overlapping of participation and similarity of the activities. As expected, they found that to the extent that conflict did exist, all three groups reported more interpersonal than social values conflict.

Vaske, Needham, and Cline (2007) clarified the interpersonal and social values conflict model by adding a third conflict group to account for people who could experience both interpersonal and social values conflict (Figure 1.2). They found that conceptual problems could occur when differentiating interpersonal from social values conflict using the previous methodology. This is because people who observe an event and consider it to be a problem could in fact be experiencing interpersonal conflict, social values conflict, or both. To test this conceptual problem, cross-country skiers and snowmobilers at two separate locations in Colorado were sampled. All respondents were asked whether they agreed or disagreed with the statement "just knowing that skiers (or snowmobilers) are in the area bothers me." Interestingly, analysis of the responses to that question was only reported for the respondents that were originally classified into the interpersonal conflict group. Respondents in this group who agreed with the statement were placed in the interpersonal and social values conflict group; those who did not remained in the interpersonal conflict group. The study found that 1% to 20% of respondents expressed both interpersonal and social values conflict for each of the individual conflict situations; although, a cluster analysis did not reveal a clear group among the total proportions of skiers and snowmobilers that reported both interpersonal and social values conflict. The revised interpersonal and social values conflict model was also applied in a study of perceived conflict with off-leash dogs conducted for the city of Boulder, CO (Vaske et al., 2007). In that study, the results of the cluster analysis revealed that 59% of respondents experienced both interpersonal and social values conflict with off-leash dogs and their owners.

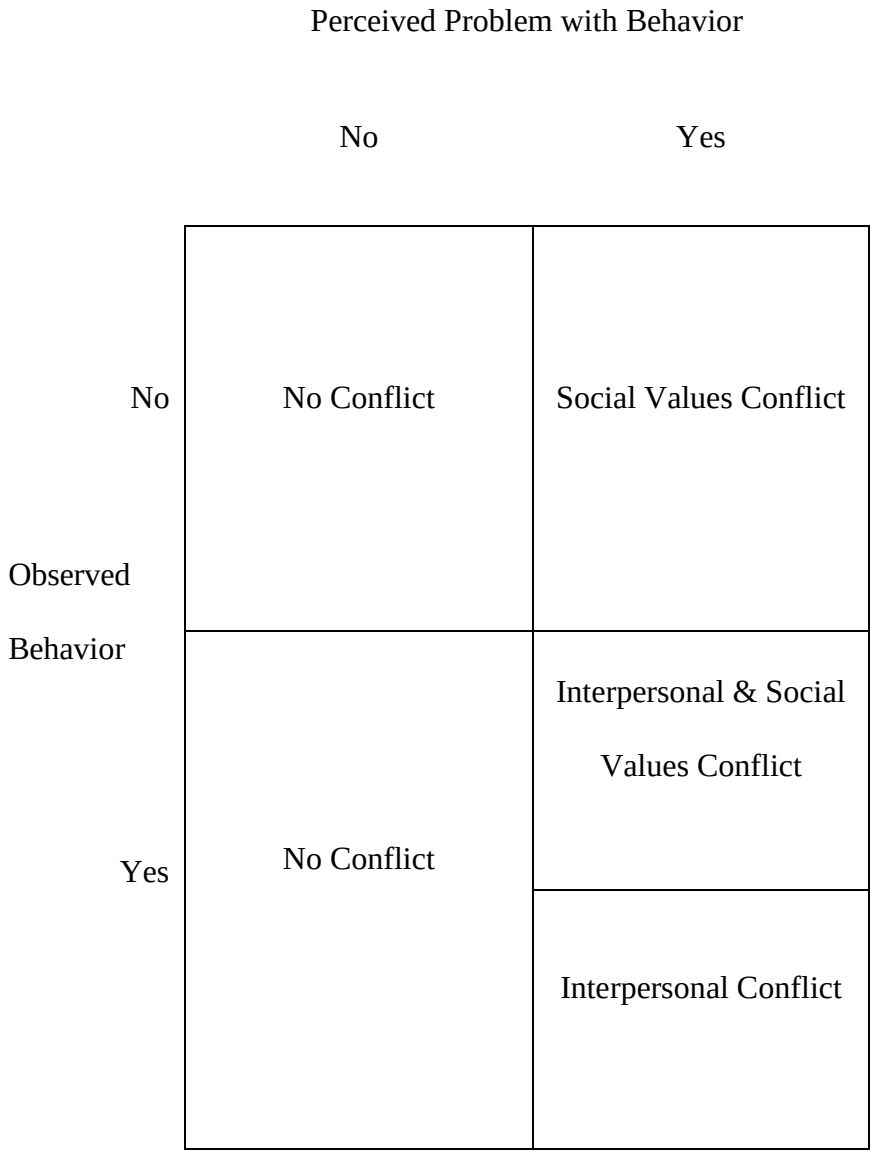

Figure 1.2. Revised conflict evaluation table (Adapted from Vaske et al., 2007).

More recently, measurements of interpersonal conflict and social values conflict were applied to recreationists at six beach location in Hawaii (Tynon & Gomez, 2012). The authors looked at the extent to which the evaluations of coastal recreation conflicts differed among groups. They found that reported levels of interpersonal conflict and social values conflict was more aligned with activity group rather than by behavior. For example, sunbathers or swimmers

were well defined in measuring interpersonal conflict as opposed to anglers and boaters who were well defined in measuring social values conflict.

1.6. Management Implications

The distinction between interpersonal and social values conflict is important because of the associated management implications (Vaske et al., 2007). Three general strategies have been recognized for dealing with conflict: zoning, education, and adopting alternative management strategies (Graefe & Thapa, 2004; Vaske et al., 1995). Conflict resulting from interpersonal interactions can generally be ameliorated by zoning incompatible uses. Alternative management strategies such as enhancing facilities to accommodate a use and/or to reduce impacts may also be effective. Alternatively, education and outreach efforts are often the preferred strategy for dealing with social values conflict, but may not be effective at changing core values. If social values conflict is pervasive, eliminating the use altogether or severely limiting where and when an activity can take place may be the only management strategy that is effective at dealing with the problem. Hidalgo and Harshaw (2010) empirically tested the efficacy of education programs on social values conflict and zoning on interpersonal conflict at nine separate trail heads in Squamish, British Columbia, Canada. They found that individual management practices had little effect on reducing conflict when compared to areas where those management practices did not exist. As Moore (1994) suggests, perhaps a combination of management practices has more potential to reduce user conflicts compared to one strategy.

1.7. Measurement Issues and Inconsistency

A limiting factor in the furtherance of the body of knowledge pertaining to recreation conflict is the lack of consensus among researchers regarding how it should be operationalized (Thapa & Graefe 2004) and measured (Watson, 1995). Early on it was recognized that

operationalizing the concept of conflict would present researchers with many difficulties because of its abstract nature (Fink 1968). For example, what exactly is conflict and how do you define it? What variables are important and how are they measured. These questions have been a persistent problem for over 50 years, and while the development of the theoretical frameworks mentioned above have helped, the accumulation of knowledge on this subject continues to be limited.

1.8. Study Goals

My study focused on the normative approach to conflict research, with the goal of replicating and enhancing past research methodologies, and adding to the body of knowledge pertaining to interpersonal versus social values conflict. It builds upon the methodology and conflict typology refined by Vaske et al. (2007) in two distinct ways: 1) it adds an additional conflict typology called "latent-behavior conflict" to differentiate between social values conflict and problem behaviors and 2) creates one instead of multiple measurements to assess social values conflict. Previous methods relied on indirect, behavior-based measures that have the potential to underestimate the number of people assessed has having social values conflict.

The purpose of this work was to test the methodological issue discussed above and to document the type and extent of river use that is occurring; the occurrence, type, and distribution of conflict among river recreational users; and to test the viability of the "latent-behavior conflict" typology. Additional goals of this work include publishing an article in a peer reviewed journal to contribute to the existing body of academic research on recreation conflict and presenting a summary report to state park managers.

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CHAPTER 2 - Further Clarification of Interpersonal versus Social Values Conflict: Insights from Motorized and Non-motorized Recreational River Users[1]

2. Abstract

This study examined interpersonal conflict and social values conflict among motorized and non-motorized river recreational users at a relatively low use recreation area in interior Alaska. Previous methodologies for operationalizing social values conflict are not conceptually clear and may result in individuals being classified into the wrong conflict typology. This study addressed these conceptual problems by: 1) introducing a new conflict typology to differentiate between social values conflict and latent problem behaviors and 2) by uniformly applying a non-behavior based measure to classify social values conflict. Data were collected using an on-site survey provided to motorized (n = 26) and non-motorized (n = 63) river recreational users at multiple put-in/take-out locations. To the extent conflict existed, social values conflict was the most prevalent. A small but perceptible number of respondents in both user groups reported a latent-behavior conflict. Based on these data, results generated using the methods in this study were compared to the results generated using previous methodologies. Differences were found between the number of non-motorized respondents who were classified into the no conflict and social values conflict typologies.

2.1. Introduction

Conflict has been a topic of outdoor recreation related research for nearly 50 years (Lucus, 1964; Tynon & Gomez, 2012). Early conflict research was descriptive and primarily

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focused on a density dependent notion of conflict that emphasized incompatibility between uses and competition over resources (Deval & Harry, 1981; Bury, Holland, & McEwen, 1983). With the introduction of the goal interference (i.e., interpersonal conflict) model by Jacob and Schreyer (1980) research quickly evolved to place greater emphasis on the underlying reasons that precipitate a conflict situation and how they could be managed. In the 1990s, the idea of social acceptability or social values, defined in this context as recreationists' evaluation of acceptable recreation activities in an area, became an important theory in conflict management (Blahna, Smith & Anderson, 1995; Williams, 1993). As a result, more recent conflict research has explored the concept of interpersonal versus social values conflict (Carothers, Vaske, & Donnelly, 2001; Hidalgo & Harshaw, 2010; Tynon & Gomez, 2012; Vaske & Donnelly, 2007; Vaske, Donnelly, Wittmann, & Laidlaw, 1995), with the operationalization of social values conflict continuing to evolve (Vaske, Needham, & Cline, 2007). This study extends previous research by offering further clarification of the distinction between interpersonal and social values conflict. Specifically it examines several potential limitations with the conceptualization of social values conflict, proposes a method to account for those limitations, and compares the typologies that result when applying different methods.

2.1.1. Interpersonal Conflict

Jacob and Schreyer (1980) defined conflict as "goal interference attributed to another's behavior" (p. 396). According to their model, referred to as interpersonal conflict in subsequent literature, in order for conflict to occur there must be direct or indirect social contact. For example, a hiker may experience interpersonal conflict if she is passed on a narrow trail by a mountain biker who is traveling too fast (Watson, Williams, & Daigle, 1991). Jacob and Schreyer (1980) introduced four factors (activity style, resource specificity, mode of experience,

and tolerance for lifestyle diversity) that contribute to conflict. A combination of factors or a single factor alone could be enough to cause conflict. Studies of interpersonal conflict have been conducted on multiple activity groups that include canoeists and motor boaters (Lucas, 1964; Adelman, Herberlein, & Bonnicksen, 1982), hikers and stock users (Watson, Niccolucci, & Williams, 1993), cross-country skiers and snowmobilers (Knopp & Tyger, 1973; Jackson & Wong, 1982), oar-powered rafters and motor powered rafters (Shelby, 1980), and skiers and snowboarders (Thapa & Graefe, 2003; Vaske, Carothers, Donnelly, & Baird, 2000); the theory has generally been supported (Thapa & Graefe, 2004). While the concepts introduced by Jacob and Schreyer have exhibited a high degree of generalizability across activities, they did not offer an explanation for conflict in the absence of contact or a model for measuring such.

2.1.2. Social Values Conflict

Conflict can also arise between user groups that do not share the same norms and/or values (Saremba & Gill, 1991; Ruddell & Gramann, 1994). Blahna et al. (1995), for example, found that while encounters with llama packing trips may be rare, some individuals may philosophically disagree with the appropriateness of allowing llama packing to occur in the backcountry. In a study of hikers and mountain bikers in the Rattle Snake National Recreation Area, nearly two-thirds of hikers, most of whom had encountered mountain bikers, reported that mountain bikers were objectionable, although hikers had difficulty expressing the behaviors they found objectionable (Watson et al., 1991). In these situations, regulating behaviors or separating users, as might work in situations of interpersonal conflict, likely would not be effective as the source of conflict is not linked to a particular behavior. Conflict associated with differing norms and/or values as in the Blahna et al. (1995) is often referred to as social values conflict. It has

developed into an alternative theory of recreation conflict and differs from interpersonal conflict in that it focuses on perceived conflict in the absence of direct interaction between users.

Vaske et al. (1995) further defined the construct of social values conflict as a recreationist having problem with a behavior without having witnessed that particular behavior. They operationalized its measurement through a series of survey questions regarding witnessing behavior and evaluations of those behaviors. Their model was supported in a study of conflict between hunters and non-hunters on Mt. Evans in Colorado. They hypothesized that since agency regulations and geographic conditions minimized encounters between these two groups, any conflict that did exist was more likely to be attributed to social values conflict than interpersonal conflict. Perceived conflict was operationalized by providing respondents with a series of behaviors and asking them to rate the frequency of observation and to what extent they were perceived to be a problem. The individual responses were combined to create a conflict typology. The results of the study indicated that to the extent conflict existed for the hunting-associated events, most of the problem was associated with differences in social values, indicating that simply knowing hunters were in the area was enough to trigger perceptions of conflict. Researchers then applied this model to different situations to assess its generalizability.

Carothers et al. (2001) tested whether the distinction between interpersonal conflict and social values conflict generalized to groups more similar in their value orientations. Their study of mountain bikers, hikers, and dual-sport participants (hikers and bikers) found that to the extent that conflict existed, interpersonal conflict was more prevalent than social values conflict. For example, when evaluating hikers, between 10% and 33% of the three groups indicated a social values conflict. In contrast, between 67% and 90% reported interpersonal conflict. This finding is not surprising given the similarities between these groups. However, the fact that social values

conflict was detected among users who are likely to share similar values/norms raises a methodological consideration: did those classified as having social values conflict not witness behavior because they purposefully took actions to avoid a potential interpersonal conflict?

In 2007, Vaske et al. speculated that a potential overlap might exist between interpersonal and social values conflict and posited that people who observe an event and consider it to be a problem could in fact be experiencing interpersonal conflict, social values conflict, or both. The methodology used by Vaske et al. (1995) to distinguish between interpersonal and social values conflict was revised by adding an additional conflict group to account for people who may experience both interpersonal and social values conflict. The revised method was tested on cross-country skiers and snowmobilers at two separate locations in Colorado. Respondents in the interpersonal conflict group were segmented based on whether they agreed or disagreed with the statement "just knowing that skiers (or snowmobilers) are in the area bothers me." Respondents who agreed with the statement were placed in the interpersonal and social values conflict group; those who did not remained in the interpersonal conflict group. The study found that some respondents expressed both interpersonal and social values conflict for each of the problem behaviors. The revised interpersonal and social values conflict model was also applied in a study of perceived conflict with off-leash dogs (Vaske & Donnelly, 2007). This study found that a majority of respondents experienced both interpersonal and social values conflict with off-leash dogs and their owners and provided additional empirical evidence of the new conflict group.

More recently, measurements of interpersonal conflict and social values conflict were applied to recreationists at six beach locations in Hawaii (Tynon & Gomez, 2012). A diverse group of recreational activities were included in the study (sunbathing, swimming, beach walking, surfing, scuba diving, snorkleling, windsurfing, kitesurfing, kayaking, and fishing). The

authors found that reported levels of interpersonal conflict and social values conflict were more aligned with activity groups than behaviors. For example, sunbathers and swimmers were more likely to report interpersonal conflict as opposed to anglers and boaters who were more likely report social values conflict. This finding suggests that something other than behaviors are contributing to evaluations of social values conflict.

Thus while studies have consistently confirmed the presence of the interpersonal-social values conflict distinction, and the significance for management, the procedures used to operationalize social values conflict are not conceptually clear (Vaske et al., 1995, Vaske et al., 2007). Social values conflict has been operationalized in two ways: 1) people who do not witness a behavior but believe it to be a problem are said to be expressing social values conflict and 2) social values conflict among people who express an interpersonal conflict is assessed by responses to questions as to whether just knowing that another user group is in the area bothers them. With the first, conceptual problems arise because it is unclear whether or not people are simply expressing a problem with a behavior rather than a social values conflict based on differing norms and/or values. For example, a recreationist may not have a social values conflict with a different group but circumvents using an area at a certain time to avoid specific behaviors they believe to be a problem; perhaps even the behaviors of those participating in the same activity. Likewise, a respondent may have received second hand reports of conflict behaviors from friends or other members of their user group. In this case, there is no guarantee that a reported problem in the absence of witnessing the behavior represents a social values conflict as it may simply be a result of what the respondent has heard about the behavior. We applied the term “latent-behavior conflict” to describe this situation; i.e., a person is not in opposition to the activity in general, but rather feels specific behaviors, which they personally did not encounter,

are a problem. With the second, there are potential issues with applying different measures of social values conflict to different subgroups of respondents (i.e., some respondents are classified based on their observations and evaluations of behaviors, others are classified with a direct social values question).

2.1.3. Study Objectives

This study used data from motorized and non-motorized river users to address these conceptual problems. Modifications were made to previous research methodologies (Vaske et al., 2007) by incorporating a new conflict typology - latent-behavior conflict - to differentiate between social values conflict and problem behaviors and by uniformly categorizing social values conflict with the single, direct measure. Conflict typology tables were produced using both methodologies and compared. As different management actions have been suggested for different types of conflict (Graefe & Thapa, 2004), it is important to correctly classify the type of conflict (if any) expressed by survey respondents. The methods applied in this paper offer considerations for the future operationalization of conflict.

2.2. Methods

2.2.1. Study Area

Data for this study were obtained from motorized and non-motorized recreational river users in the Chena River State Recreation Area (CRSRA) located approximately 30 miles east of Fairbanks, Alaska. Managed by Alaska State Parks, the CRSRA is centered on the clear running Chena River. Chena Hot Springs Road runs through the area and its many spur roads provide easy access to multiple points along the river for non-motorized floaters, on-bank anglers, and motorized boaters. The river is a popular destination for floaters including rafters, kayakers, and

canoers. It offers premier fishing for Arctic grayling and is a popular destination for anglers as well. The river and its tributaries are also used by motor boaters, air boaters, and jet skiers, primarily during hunting season in late August through the middle of September. While park management does not restrict motorized uses of the river, the shallow, narrow, and twisting nature of the river poses natural impediments that limit motorized use; thus interactions between motorized and non-motorized users are more likely to occur at specific put-in/take-out locations and river segments.

2.2.2. Data Collection

An onsite survey was administered along Chena Hot Springs Road at four popular access points where a variety of users would be present: a put-in/takeout used by a variety of users (28 mile), two popular road-side access areas offering day use, camping, and informal put-in–take-outs (37.8 mile, "1st bridge" and 39.5 mile, "2nd bridge"), and a put-in/take-out where hunters were more likely to be present (44 mile, "3rd bridge") between the hours of one to seven pm. Given the relative low use levels, all non-motorized river users (kayakers, canoers, rafters, and anglers) and motorized river users (motor boaters, jet skiers, and air boaters) encountered were asked to take the survey. The survey was administered on 11 randomly selected weekend days (Friday, Saturday, and Sunday) between May 22 and September 10, 2011.

2.2.3. Survey Instrument

In accordance with past research (Carothers et al., 2001; Vaske et al., 1995; Vaske et al., 2007) respondents were first asked how often they observed specific situations/events. For example, non-motorized users were asked how often they observed motorized users engaging in the following situations/events: (a) rude and discourteous behavior, (b) not yielding the right of way, (c) producing engine noise, (d) passing too closely, and (e) traveling out of control.

Response categories were “never”, “1-2 times,” “3-5 times,” and “almost always.” Respondents were subsequently asked to evaluate whether or not they felt these events/situations were a problem, measured with a 4-point scale from “not a problem” to “extreme problem.” To assess social values conflict, all respondents were asked whether or not they agreed or disagreed with statements about just knowing that non-motorized users or motorized users are in the area bothered them. Responses were recorded on a 5-point scale from “strongly disagree” to “strongly agree.”

2.2.4. Analysis

Consistent with past research (Carothers et al., 2001; Vaske et al., 1995; Vaske et al., 2007), responses to the questions about the frequency in which situation/events were observed were recoded into two categories, “did not observe” and “observed” (i.e., one or more times). The replies concerning whether or not the situations/events presented were perceived to be a problem were recoded into two categories, “no problem” and “problem” (i.e., slight to extreme problem). Responses to questions about whether or not survey participants were bothered just knowing other user groups are in the area were recoded into, “bothered” (i.e. strongly agree to agree) and “not bothered” (i.e. strongly disagree to neutral).

Due to the small sample size, Fisher’s exact test was used instead of the Chi-square test to compare differences between user groups and their responses when observing events/situations, problems with the events/situations, and social values conflict. Chi-square tests were used to compare the distribution of conflict typologies between motorized and non-motorized users. Where applicable, Cramer’s *V* was used to measure the relative strength of associations between the variables.

2.2.5. Conflict Typology

Combining the frequency of occurrence (observed, not observed), perceived problem (problem, no problem), and social values (bothered, not bothered) variables for each respondent resulted in conflict typologies with five possible outcomes: (a) no conflict, (b) interpersonal conflict, (c) social values conflict, (d) interpersonal and social values conflict, and (e) latent-behavior conflict (Figure 2.1). To illustrate, a motorized user who has "observed" a non-motorized user traveling out of control, states the behavior is "no problem", and reports they are "bothered" just knowing non-motorized users are in the area would be labeled as having social values conflict. An alternative example is a non-motorized user who did not observe a motor boater passing too closely, perceives it to be a "problem," but is not "bothered" just knowing motorized users are in the area; in this case, the non-motorized user would be labeled as having latent-behavior conflict.

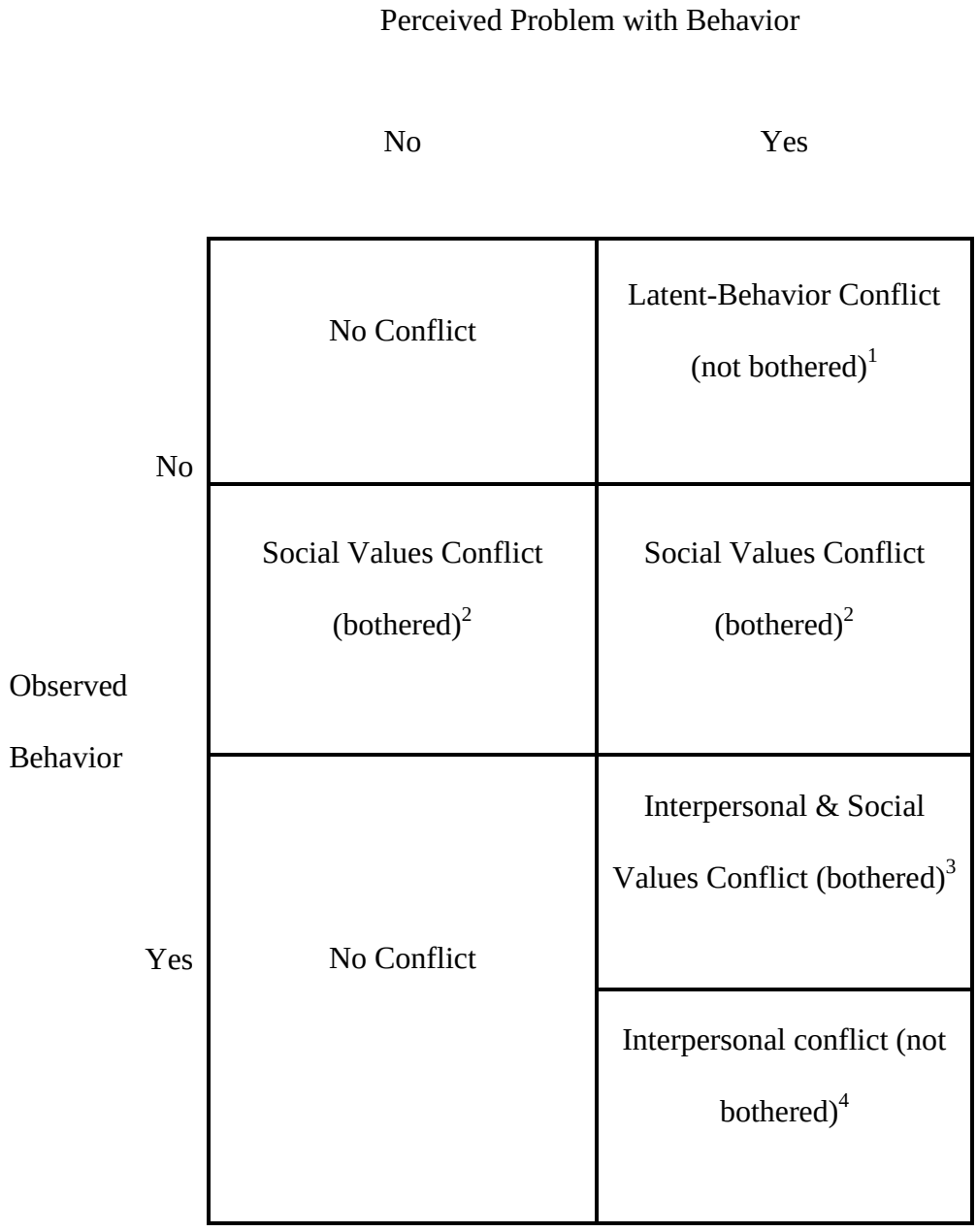

Figure 2.1. Conflict evaluation table with the addition of latent-behavior conflict.

[1]Respondents did not observe a given situation, perceived it to be a problem, and disagreed with the statement "just knowing that canoeists (or kayakers, rafters, motor boaters, jet skiers, air boaters, fishermen) are in the area bothered them." [2]Respondents did not observe a given situation, perceived it to be a problem or not a problem, and agreed with the statement "just knowing that canoeists (or kayakers, rafters, motor boaters, jet skiers, air boaters, fishermen) are in the area bothered them." [3]Respondents observed a given situation, perceived it to be a problem, and agreed with the statement "just knowing that canoeists (or kayakers, rafters, motor boaters, jet skiers, air boaters, fishermen) are in the area bothered them." [4]Respondents observed a given situation, perceived it to be a problem, and disagreed with the statement "just knowing that canoeists (or kayakers, rafters, motor boaters, jet skiers, air boaters, fishermen) are in the area bothered them." *Note*, figure based on typology presented by Vaske, Needham, and Cline, Jr. (2007).

2.3. Results

2.3.1. Respondent Profiles

Ninety-two river users were asked to complete the survey; three refused resulting in a 97% response rate and a sample size of 89. The small sample size stems from the low user population. Recreational use counts conducted between May 22 and Sept. 15 in 2004 and 2005 to assess summer use on the Chena River within the CRSRA estimated the population of non-motorized users to be 383 and 200, respectively. The difference in the population estimates may be attributed to differences in methodology or exogenous factors such as weather, but in general, both estimates point to low use. Those studies, while not focusing on the sections of river used by motorized users, estimated 14 and 10 motorized users, respectively (Paragi, 2005). The low use levels might influence expectations, but should not influence measures of perceived conflict. Although the small sample size limits power to detect small differences between groups and among conflict categories within a group, results provide a general indication of the type and overall magnitude of conflict and differences of practical significance between groups.

Among all respondents, 79% were male and 21% were female. Completed surveys were obtained from 26 motorized river users, 43 non-motorized river users, and 20 anglers. Chi-square tests were used to compare the responses of non-motorized users and anglers to questions concerning the frequency events/situations were observed, perceived problem with the events/situations, and social values conflict. The tests revealed statistical equivalency so the data from these user groups was aggregated. Most of the respondents reported being from the Fairbanks area (80%), 6% were from another part of Alaska, and 14% were visitors from outside the state. The age of respondents ranged from 18 to 73 years old, and averaged 38 years old. The average number of trips made to the area during the summer was five.

2.3.2. Responses to Behavior and Conflict Questions

Overall, with the exception of hearing engine noise, the majority of respondents reported they never witnessed the events/situations presented (Table 2.1). The magnitudes of the responses are consistent across the four behaviors available for comparison, with no statistical difference between motorized and non-motorized users. Evaluations of perceived problem behaviors were consistent between motorized and non-motorized users for three of the four variables available for comparison, with the majority evaluating the behaviors as "no problem" (Table 2.2). Responses were statistically different (p = .002) between the two user groups with respect to concerns about "passing too closely", with 40% of non-motorized users reporting a problem vs. only 8% of motorized users. Non-motorized users were more often bothered just knowing that motorized users were in the area than motorized users were of non-motorized users in the area. In total, 56% of non-motorized users reported being bothered compared with only 8% of motorized users ($\chi^2 = 17.358$, df = 1, $p < .001$; Cramer's $V = .442$).

Table 2.1. Behaviors Observed by Motorized and Non-Motorized Users at the CRSRA

	Motorized users[1] (n = 26) (%)	Non-motorized users[2] (n = 63) (%)	*p*-value[3]
Being rude and discourteous			.343
Never	69	62	
One or more times	31	38	
Not yielding right of way			.547
Never	65	67	
One or more times	35	33	
Heard engine noise			-
Never	-	43	
One or more times	-	57	
Passing too close			.572
Never	69	70	
One or more times	31	30	
Traveling out of control			.435
Never	81	78	
One or more times	19	22	

[1]Motorized users' evaluation of non-motorized users.
[2]Non-motorized users' evaluation of motorized users.
[3]Computed using Fisher's Exact Test.

Table 2.2. Behaviors Perceived as Problems by Motorized and Non-Motorized Users at the CRSRA

	Motorized users[1] (n = 26) (%)	Non-motorized users[2] (n = 63) (%)	*p*-value[3]
Being rude and discourteous			.225
No Problem	73	62	
Problem	27	38	
Not yielding right of way			.308
No Problem	72	63	
Problem	28	37	
Heard engine noise			
No Problem	-	54	
Problem	-	46	
Passing too close			.002
No Problem	92	60	
Problem	8	40	
Traveling out of control			.498
No Problem	81	78	
Problem	19	22	

[1]Motorized users' evaluation of non-motorized users.
[2]Non-motorized users' evaluation of motorized users.
[3]Computed using Fisher's Exact Test.

2.3.3. Conflict Typologies

Perceived conflict evaluations were operationalized by combining each individual's responses to the witness events/perceive the events to be a problem questions. In general, the "no conflict" responses were fairly consistent across all the events/situations, with motorized users reporting less conflict than non-motorized users (Table 2.3). To the extent conflict existed for motorized users, results were not conclusive as to whether interpersonal or social values conflict was more prevalent. For two of four behaviors interpersonal conflict was higher than social values conflict, but differences were not found in the other two behaviors. Interpersonal was one of the least reported types of conflict among non-motorized users. Of conflict reported by non-motorized users, between 21% and 44% reported a social values conflict. With respect to hearing engine noise, perceived conflict was related to a combination of interpersonal and social values. Where comparisons were possible; conflict that included both interpersonal and social values accounted for 11% to 35% of non-motorized users' responses and 0 to 8% of motorized users' responses ($p < .010$). Among the four situations/events where comparisons were possible, the type of conflict reported was significantly different between motorized and non-motorized users ($p < .001$). A small number of both users groups reported a latent-behavior conflict with other river users not yielding the right of way, passing too close, and traveling out of control. As a cautionary note, given our small sample size measurement error cannot be dismissed as one possible explanation.

Table 2.3. Conflict Typologies of Motorized and Non-Motorized Users at the CRSRA

	Motorized users[1] (%)	Non-motorized users[2] (%)	*p*-value[3]
Being rude and discourteous			< .001
No conflict	73	33	
Interpersonal conflict	19	11	
Social values conflict	0	32	
Interpersonal & social values	8	24	
Latent-behavior conflict	0	0	
Not yielding right of way			< .001
No conflict	72	35	
Interpersonal conflict	16	8	
Social values conflict	0	33	
Interpersonal & social values	8	22	
Latent-behavior conflict	4	2	
Heard engine noise			-
No conflict	-	35	
Interpersonal conflict	-	9	
Social values conflict	-	21	
Interpersonal & social values	-	35	
Latent-behavior conflict	-	0	
Passing too close			< .001
No conflict	84	37	
Interpersonal conflict	4	6	
Social values conflict	8	33	
Interpersonal & social values	0	22	
Latent-behavior conflict	4	2	
Traveling out of control			< .001
No conflict	81	40	
Interpersonal conflict	7	3	
Social values conflict	8	44	
Interpersonal & social values	0	11	
Latent-behavior conflict	4	2	

[1]Motorized users' evaluation of non-motorized users.
[2]Non-motorized users' evaluation of motorized users.
[3]Computed using Fisher's Exact Test.

2.3.4 Conflict Typology Using Previous Research Methods

For comparative purposes, perceived conflict evaluations were also operationalized using the procedures developed by Vaske et al. (2007). Like the conflict typologies previously reported, conflict was consistently higher among non-motorized users (Table 2.4). The prevalence of the no conflict typology was greater when using Vaske et al. (2007) methods than reported above. For example, following Vaske et al.'s method, between 54% and 78% of non-motorized users indicated no conflict, compared with 33% to 40% of non-motorized users who reported no conflict using our method. Reports of no conflict for motorized users varied only slightly between the two methods. Conflicts including interpersonal and interpersonal and social values remained relatively constant across all events/situations when using both methodologies. Social values conflict however, was consistently lower using the Vaske et al. (2007) method. For example, social values conflict accounted for 2% to 11% of non-motorized users compared with 21% to 44% reported in this study.

Table 2.4. Methodological Comparison of Perceived Conflicts Reported by Motorized and Non-Motorized Users at the CRSRA

	Motorized users[1]			Non-motorized users[2]		
	Vaske et al. (2007)	CRSRA study	*p*	Vaske et al. (2007)	CRSRA study	*p*
Being rude and discourteous			1.00			< .001
No conflict	73	73		62	33	
Interpersonal conflict	19	19		11	11	
Social values conflict	0	0		3	32	
Interpersonal & social values	8	8		24	24	
Latent-behavior conflict	0	0		0	0	
Not yielding right of way			1.00			< .001
No conflict	72	72		64	35	
Interpersonal conflict	16	16		8	8	
Social values conflict	4	0		6	33	
Interpersonal & social values	8	8		22	22	
Latent-behavior conflict	0	4		0	2	
Heard engine noise			-			< .003
No conflict	-	-		54	35	
Interpersonal conflict	-	-		9	9	
Social values conflict	-	-		2	21	
Interpersonal & social values	-	-		35	35	
Latent-behavior conflict	-	-		0	0	
Passing too close			.801			< .001
No conflict	92	84		61	37	
Interpersonal conflict	4	4		6	6	
Social values conflict	4	8		11	33	
Interpersonal & social values	0	0		22	22	
Latent-behavior conflict	0	4		0	2	
Traveling out of control			.801			< .001
No conflict	81	81		78	40	
Interpersonal conflict	8	7		3	3	
Social values conflict	11	8		8	44	
Interpersonal & social values	0	0		11	11	
Latent-behavior conflict	0	4		0	2	

[1]Motorized users' evaluation of non-motorized users.
[2]Non-motorized users' evaluation of motorized users.

2.4. Discussion

To the extent that conflict among motorized and non-motorized river users in the CRSRA actually existed, social values conflict was the primary type of conflicted reported. Not all respondents who expressed a problem with an un-witnessed behavior reported a social values conflict and were therefore classified as expressing latent-behavior conflict. Differences in how social values conflict was measured resulted in discrepancies in how respondents are categorized into conflict groups. These findings have interesting methodological and applied implications on how social values conflict is measured.

The results of this study reinforced findings from previous research (Vaske et al., 1995) showing that interpersonal conflict between user groups is limited in areas where geographic features minimize interactions between groups. The extent of conflict reported was minimal among motorized users and fairly ubiquitous among non-motorized users. This was to be expected given previous research showing the one-way or asymmetrical nature of conflict among motorized and non-motorized recreational users (Manning, 2011). To the degree that conflict exists for non-motorized users in the CRSRA, differences in social values was the main driver.

Latent-behavior conflict was minimal but did appear in the results. Our preliminary finding lends support for further testing of this concept by including the latent-behavior conflict classification in the conflict typology table. The presence of this typology in other studies would highlight the need to differentiate between those who are merely expressing a problem with an un-witnessed behavior from respondents who are philosophically opposed to the presence of another user group because of differences in values and/or norms. Latent-behavior conflict may be more prevalent in areas where social values conflict is expected to be minimal. For example, Carothers et al. (2001) found that when hikers evaluated the behaviors of other hikers, 14% to

33% indicated a conflict in social values. Given that hikers are likely to share the same norms and/or values, it is very likely that latent-behavior conflict as opposed to social values conflict was the issue.

From a methodological standpoint, the addition of the latent-behavior conflict group may provide a more accurate measure and increase our understanding of conflict. From a management perspective, it might indicate that changing a group's behavior could be enough to reduce conflict in some situations. It would be interesting to see if future investigations into conflict among recreational users also detect latent-behavior conflict and whether or not displacement is a contributing factor. The addition of the latent-behavior conflict group helped to facilitate the revised measure of social values conflict used in this study by providing an outlet other than social values conflict for respondents who expressed a problem with an un-witnessed behavior but were not bothered just knowing another user group was in the area.

When compared with the Vaske et al. (2007) method, most of the differences in the number of non-motorized respondents assigned to the "no conflict" and "social values conflict" groups can be attributed to respondents who stated that they did not have a problem with the behaviors but nonetheless, still expressed that knowing another user group was in the area bothered them. With the methods used in this study, these respondents were classified into the social values conflict typology. These same respondents were classified into the "no conflict" typology when applying the methods used by Vaske et al. (2007). This finding suggests that respondents who do not have a problem with a behavior, regardless if they witness it or not, can still express a social values conflict. It also suggests that behavior-based measurements of social values conflict have the potential to result in an overestimation of the no conflict group when differences in social values are an issue. This possibility should be explored further in future

studies, as Vaske et al. (2007) did not find a shift in the no conflict classification in their data (J. J. Vaske, pers. communication March 15, 2014).

This methodological issue could greatly alter the conclusions of a study. If respondents are incorrectly classified into a conflict typology, the type and magnitude of conflict can be misrepresented and the appropriate management strategy may not be applied. Future investigations that measure social values conflict could benefit from measuring the strength of the social values conflict. In addition, learning more about the specific beliefs people have regarding why another user group may be bothering them would help managers create more specific information for outreach efforts to reduce conflict potential.

The distinction between interpersonal and social values conflict is important because of the potential management implications (Vaske et al., 2007). The identification of latent-behavior conflict, if it is present, would further guide management in applying the appropriate strategy to reduce conflict. Three general strategies have been recognized for dealing with conflict: zoning, education, and adopting alternative management strategies (Thapa & Graefe, 2004; Vaske et al., 1995). Conflict resulting from interpersonal interactions can generally be ameliorated by zoning incompatible uses. Alternative management strategies such as enhancing facilities to accommodate a use and/or to reduce impacts may also be effective. Those strategies might also be effective to reduce latent-behavior conflict. However, latent behavior conflict might be based on inaccurate beliefs about the behavior of others, or perhaps inaccurate generalizations of negative interactions that took place at other sites. In those situations information to correct misperceptions of specific behaviors could be an effective strategy. Alternatively, education efforts are often the preferred strategy for dealing with social values conflict, although they may not be effective at changing core values. Hidalgo and Harshaw (2010) empirically tested the

efficacy of education programs on social values conflict and zoning on interpersonal conflict at nine separate trail heads in Squamish, Canada. They found that individual management practices had little effect on reducing conflict when compared to areas where those management practices did not exist. As Moore (1994) suggests, perhaps a combination of management practices has more potential to reduce user conflicts compared to one strategy. In the CRSRA, a combination of management strategies has the greatest potential to reduce conflict among river recreational users. Education efforts could reduce all categories of conflict by broadening general understanding among users, dispelling myths, and communicating established rules of engagement. For example all four conflict categories were associated with the behaviors of not yielding the right of way, passing too close, and traveling out of control. Regarding passing too close and traveling out of control, detailed information that motorized boats have more control at higher speeds (i.e., when they are on plane) and that they might not be able to safely maneuver into shallower sections of the river (to give a wider berth to a non-motorized user) might address both interpersonal and latent-behavior conflict. Not yielding the right of way could be addressed by information conveying the accepted norms for yielding in river situations. To address social values conflict, information campaigns could stress the recreation area's enabling legislation which mandated multiple-use management. This information should be placed in information kiosks in the CRSRA; to reach a broader audience, media such as online videos providing demonstrations of these points should also be produced. Alternative management strategies such as creating an alternative put-in at a strategic location could enhance access opportunities for motorized users during the hunting season, limit interactions between motorized and non-motorized users, and maintain quality recreational experiences for non-motorized users.

2.5. Conclusions

To the extent that conflict did exist in our study area, social values conflict was the primary type of conflict reported in this study. The inclusion of the latent-behavior conflict classification was supported and highlights the need to further test this conflict typology and identify recreational users that have a problem with a particular behavior but are not philosophically opposed to the presence of another user group because of differences in values and/or norms. The application of a non-behavior based measurement of social values conflict demonstrated that respondents who did not have a problem with a behavior, regardless if they witnessed it or not, could still express a social values conflict. This observation suggests that behavior-based measurements of social values conflict have the potential to result in an overestimation of the no conflict group when differences in social values are an issue.

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CHAPTER 3 - Management Summary for Alaska State Parks[2]

3.1. Summary of Key Findings and Recommendations

In the summer of 2011, an on-site survey of river users in the Chena River State Recreation Area (CRSRA) was conducted. The purpose of the survey was to identify the type and level of river use that was occurring, and to determine the occurrence of, type, and distribution of conflict among river recreational users. The 2006 CRSRA Management Plan identified a need to learn more about recreational river users and provided the impetus for this study. A summary of the key findings and recommendations are listed below.

3.1.1. Key Findings

1. The following types of river uses were observed: angling, canoeing, rafting, kayaking, motor boating, air boating, jet skiing, and pack rafting.
2. Of the vessels/anglers observed using the river, non-motorized river use accounted for 80% of the observations; motorized use accounted for 20%.
3. Nearly all motorized use was associated with hunting activities occurring within the Middle Fork drainage.
4. Interactions between motorized and non-motorized river users are most likely to occur between the put-in/take-out at 3rd bridge along Chena Hot Springs Road and the confluence of the Middle Fork and Main Stem of the Chena River.

[2] Report by Michael J Gibson to be submitted to Alaska State Parks, Northern Region.

5. Approximately 16% - 28% of motorized users reported a conflict with non-motorized users. By comparison, 60% - 67% of non-motorized users reported a conflict with motorized users.
6. To the extent conflict existed for motorized users, conflict associated with direct interactions with non-motorized users, referred to as "interpersonal conflict," was the type of conflict most often reported.
7. For non-motorized users, social values conflict was the most prevalent. Social values conflict occurs between users who do not share the same values/norms and focuses on conflict in the absence of direct interaction between users.
8. Non-motorized users also reported having a combination of both interpersonal and social values conflict.

3.1.2. Recommendations

1. Education, outreach, and alternative infrastructure development should be used to reduce conflict.
2. Develop education materials that focus on broadening the public's general understanding about how the river within the CRSRA is currently used and managed, geographic and temporal use patterns, and the general reasons and motivations for using the area.
3. Developed a set of voluntary "rules of engagement" to help alleviate conflict behaviors between different users when they interact on the river.
4. Disseminate these messages via the park's website, in current and new information kiosks strategically located at key put-in/take-out locations, through public contacts, and by updating the park's current river brochure.

5. Alternative put-in/take-out location below or directly adjacent to the Middle Fork could be developed to minimize interactions between motorized and non-motorized users at 3rd bridge and along the river to the Middle Fork.

3.2. Introduction

During the process of updating the Chena River State Recreation Area (CRSRA) Management Plan in 2003-2004, a proposal to restrict motorized use on the upper Chena River raised questions about the extent of river use and conflict between motorized and non-motorized users. Public comments on the issue turned out to be polarized. Non-motorized users supported restrictions on motorized use citing safety concerns, resource damage, and incompatible use. Supporters of motorized use strongly opposed restrictions in an area with a long standing history of allowable use for motorized users. It became clear that more information about general river use and conflict would be required before specific management objectives concerning motorized river use could be developed. The final management plan adopted by Alaska State Parks in 2006 recognized the conflict between motorized and non-motorized river users but decided that, "…there is insufficient information about the nature and level of conflicts to develop specific management objectives or restrictions" and that "initial data gathering should identify the existing use levels and type of use and type of conflict" (Alaska Division of Parks and Recreation, 2006, p. 21).

3.2.1. Study Objectives

In the summer of 2011, a study was conducted to examine the magnitude of conflict among recreational river users in the CRSRA and included anglers, motorized boaters, and non-motorized boaters. The specific objectives were to identify and report on the following: 1) the

type and level of river use and 2) the occurrence, type, and distribution of conflict among river recreational users.

3.3. Methods

A small scale study of known users (anglers, motorized users, and non-motorized users) of the CRSRA (called and elicitation study, see Appendix A-C) was conducted in 2011 to learn more about the use patterns and conflict behaviors of different user groups. Results of the elicitation study were used to create the final survey instrument that was administered in the summer of 2011. The final survey was administered onsite at four popular access points along Chena Hot Springs Road where a variety of users would be present: 28 mile, 37.8 mile (1st bridge), 39.5 mile (2nd bridge), and 44 mile (3rd bridge) between the hours of 1-7 pm (Figure 3.1). The survey included questions about user demographics, use patterns, crowding, and conflict. The following problem behaviors were used to evaluate conflict: (a) rude and discourteous behavior, (b) not yielding the right of way, (c) producing engine noise, (d) passing too closely, and (e) traveling out of control.

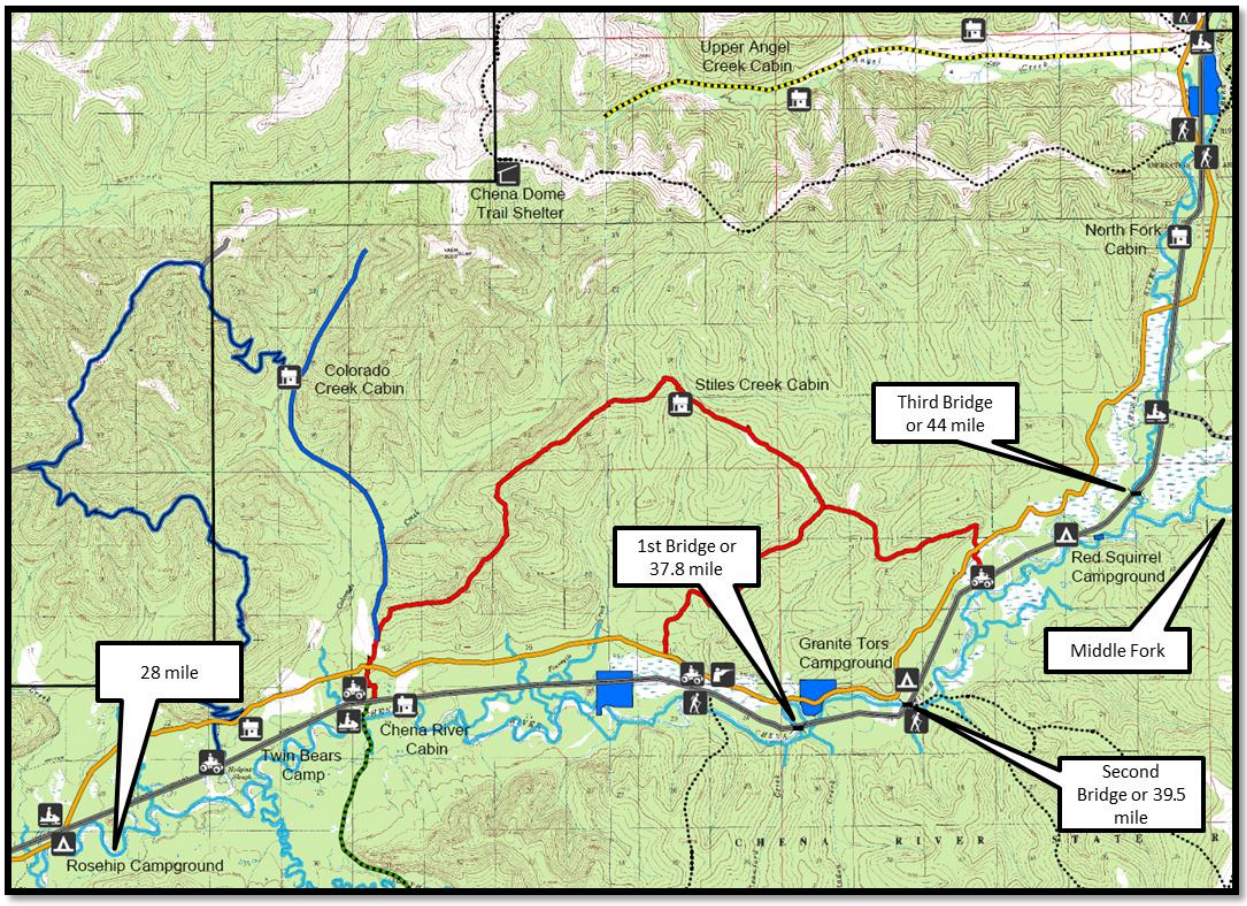

Figure 3.1. Map showing the locations where on-site surveying occurred within the CRSRA.

Given the relative remoteness of the area and expected low levels of use, all non-motorized river users (kayakers, canoers, rafters, and anglers) and motorized river users (motor boaters, jet skiers, and air boaters) encountered were asked to take the survey. This approach maximized the number of people surveyed, but as a consequence, may have contributed to pseudoreplication. This can occur when people in the same group respond to survey questions in a similar manner and can result in a decrease in sample randomization and violate the independence of datapoints; this would limit the broader application of the sample to the larger population of users. It is equally likely that respondents within a group had different responses

and pseudoreplication was not an issue in this study; however, since it was not tested, it is uncertain how people within the same group varied in their survey responses.

The original plan was to administer the survey on 11 randomly selected weekend days (Friday, Saturday, and Sunday) between May 22 and September 10, 2011. Given concerns over obtaining a large enough sample size, the sampling plan was altered to focus on Saturday and Sunday and 2nd and 3rd bridges exclusively. Additional summary information is provided in Table 3.1.

Table 3.1. Data Collection Summary. Chena River State Recreation Area, Summer 2011

Location	Dates Sampled	# of Times Sampled	# of Respondents	Hours
28 Mile	25 Jun	1	1	6
1st Bridge	10 Jun	1	1	6
2nd Bridge	22 May, 2 Jul, 31 Jul, 8 Aug	4	27	24
3rd Bridge	20 Aug, 27 Aug, 3 Sept, 4 Sept, 10 Sept	5	60	30
	Total	11	89	66

3.3.1. Measuring Conflict

Five conflict categories were assessed: (a) no conflict, (b) interpersonal conflict, (c) social values conflict, (d) interpersonal and social values conflict, and (e) latent-behavior conflict. Interpersonal conflict results when the behavior of one user interferes with the goals of another. Users must have social contact, either direct or indirect in order for interpersonal conflict to occur. Social values conflict occurs between users who do not share the same values/norms. It differs from interpersonal conflict in that it focuses on conflict in the absence of direct and indirect social interaction between users. The study also measured whether or not river recreational users were experiencing both interpersonal and social values conflict. In addition, "latent-behavior conflict" was measured. The term "latent-behavior conflict" was used to describe situations where a person is not in opposition to an activity in general, but rather feels specific behaviors, which they personally did not encounter, are a problem. Take for example an angler who has never witnessed a motor boat passing too closely, considers this behavior to be a problem in the area, and believes motorized use is a perfectly acceptable use of the area.

The concept of latent conflict has been applied to multiple fields of study including sociology, psychology, education, and business. It is built on the premise that issues associated with social tensions or dissatisfaction can simmer just below the surface, sometimes for very long periods of time, before erupting into an overt or manifest form of conflict (Bhushan & Sachdeva, 2012). In some cases, latent conflict may be present without participants perceiving an issue or any sort of conflict at all (Leavitt, Pondy, & Boje, 1989). As it relates to this study, respondents who express a latent-behavior conflict could develop more overt forms of conflict in the future.

Conflict was measured based on methodologies developed to differentiate between interpersonal and social values conflict (Carothers, Vaske, & Donnelly, 2001; Vaske, Donnelly, Wittmann, & Laidlaw, 1995; Vaske, Needham, & Cline, 2007). Respondents were first asked how often they observed specific situations/events. For example, non-motorized users were asked how often they observed motorized users engaging in the following situations/events: (a) rude and discourteous behavior, (b) not yielding the right of way, (c) producing engine noise, (d) passing too closely, and (e) traveling out of control. Response categories were "never," "1-2 times," "3-5 times," and "almost always." Respondents were subsequently asked to evaluate whether or not they felt these events/situations were a problem, measured with a 4-point scale from "not a problem" to "extreme problem." To assess social values conflict, all respondents were asked whether or not they agreed or disagreed with statements about just knowing that non-motorized users or motorized users are in the area bothered them. Responses were recorded on a 5-point scale from "strongly disagree" to "strongly agree." Responses to the three questions were combined and used to classify users into one of the five conflict groups. A figure depicting the conflict evaluation table used in this study is provided below (Figure 3.2).

Observed Behavior	Perceived Problem with Behavior: No	Perceived Problem with Behavior: Yes
No	No Conflict	Latent-Behavior Conflict (not bothered)[1]
No	Social Values Conflict (bothered)[2]	Social Values Conflict (bothered)[2]
Yes	No Conflict	Interpersonal & Social Values Conflict (bothered)[3]
Yes	No Conflict	Interpersonal conflict (not bothered)[4]

Figure 3.2. Conflict evaluation table with the addition of latent-behavior conflict.

[1]Respondents did not observe a given situation, perceived it to be a problem, and disagreed with the statement "just knowing that canoeists (or kayakers, rafters, motor boaters, jet skiers, air boaters, fishermen) are in the area bothered them." [2]Respondents did not observe a given situation, perceived it to be a problem or not a problem, and agreed with the statement "just knowing that canoeists (or kayakers, rafters, motor boaters, jet skiers, air boaters, fishermen) are in the area bothered them." [3]Respondents observed a given situation, perceived it to be a problem, and agreed with the statement "just knowing that canoeists (or kayakers, rafters, motor boaters, jet skiers, air boaters, fishermen) are in the area bothered them." [4]Respondents observed a given situation, perceived it to be a problem, and disagreed with the statement "just knowing that canoeists (or kayakers, rafters, motor boaters, jet skiers, air boaters, fishermen) are in the area bothered them." *Note*, figure based on typology presented by Vaske, Needham, and Cline (2007).

3.4. Results

3.4.1. Demographics

A total of 89 people responded to the survey, 80% were male and 20% female. The number of respondents by activity type is listed in Table 3.2 below. Of the respondents, 29% were motorized users and 71% were non-motorized users. The survey had a 96% response rate, with four people refusing to take the survey; two air boaters, one angler, and one raft guide.

Table 3.2. Number of People that Responded to the Survey by Activity Type[1]

Activity	Number (n)	Percent
Fishing	20	23%
Jet Boating	24	27%
Jet Skiing	2	2%
Canoeing	15	17%
Rafting	16	18%
Kayaking	12	13%
Total	89	100%

[1]Data gathered summer 2011

The age of respondents ranged from 18 to 73 years old with an average of 38 years old. On average, respondents reported visiting the CRSRA for 12 years, making 4 - 5 trips to the CRSRA during the summer, and travelling in groups of six.

3.4.2. Residency

Overall, 81% of respondents were from the Fairbanks area, 6% were from another part of the state, and 14% reported being from out of state. Figure 3.3 depicts residency by general activity type. When compare to other activities, a greater percentage of anglers reported being from out of state.

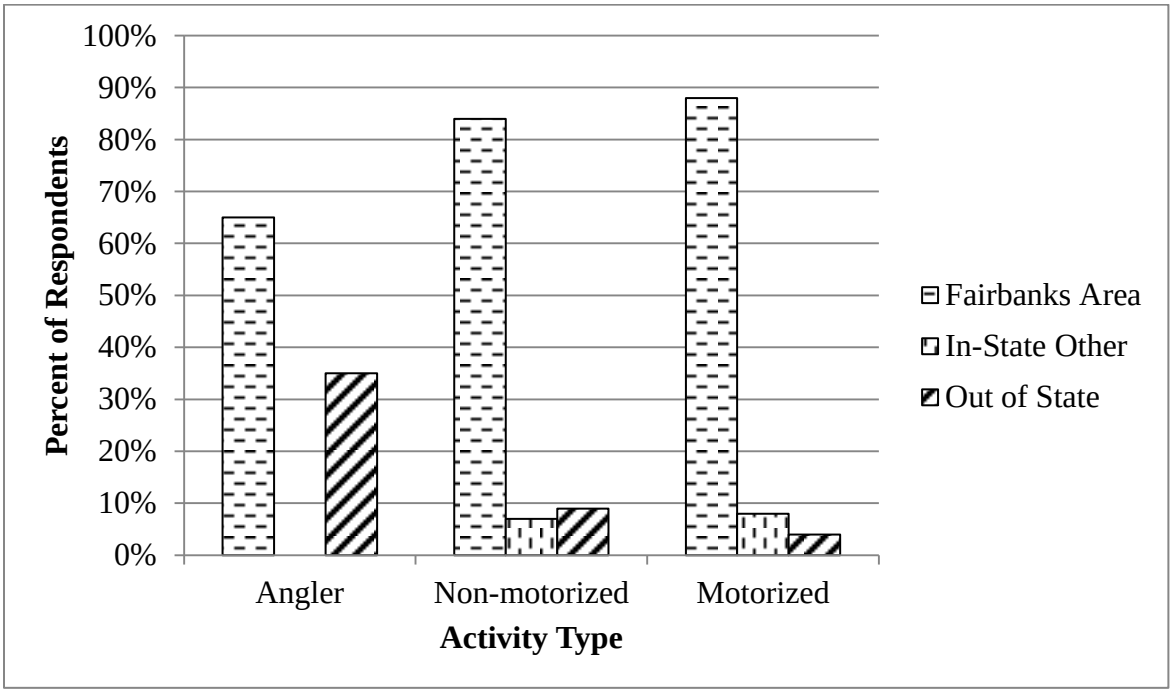

Figure 3.3. Comparison of the survey respondents by residency and activity type.

3.4.3. Type and Level of River Use

The type and level of river use was measured by counting the number of vessels and anglers observed using the water column (Figure 3.4). A total of 110 vessels/anglers were observed. Non-motorized use including anglers accounted for approximately 80% of the observations. Seeing pack rafts was unexpected and indicates a new recreational use of the area is occurring.

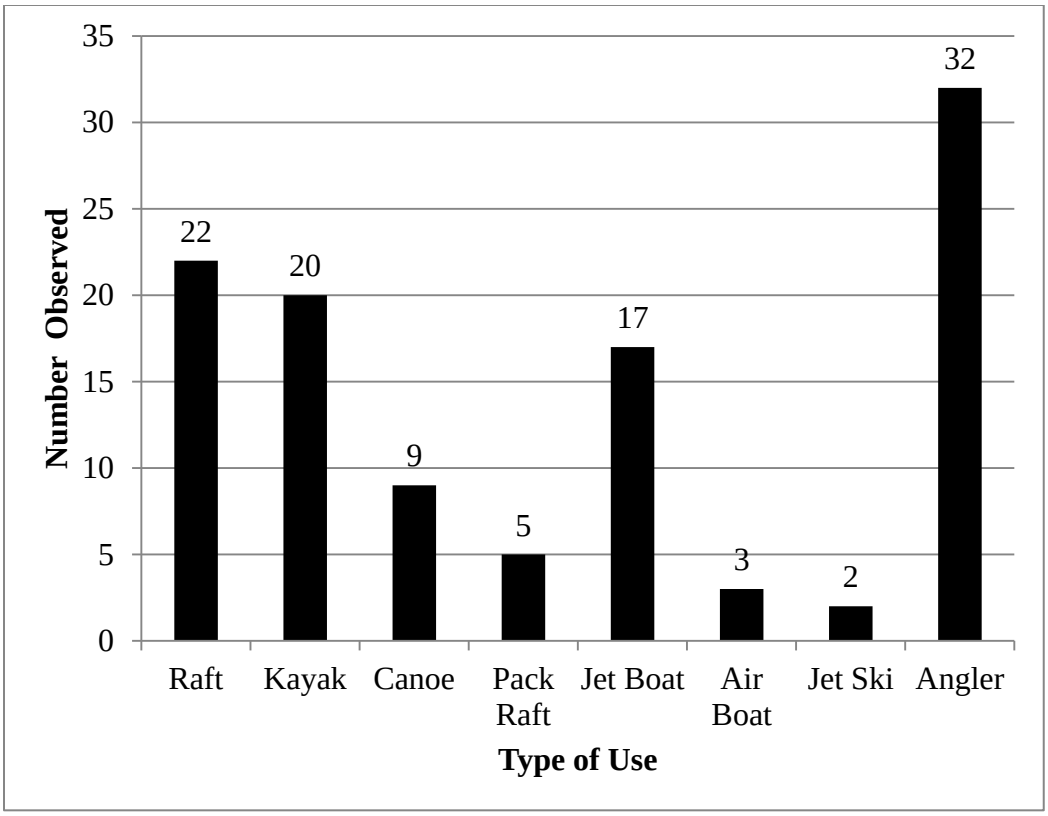

Figure 3.4. The number of anglers, motorized, and non-motorized vessels observed using the Chena River at summer 2011 sampling locations.

The number of users observed was compared to use counts conducted by CRSRA park staff and members of the Citizen Advisory Board in 2004 and 2005 (Table 3.3). For comparison purposes, the pack rafters observed in 2011 were included in the raft category. In comparing the 2011 observation period to 2004 and 2005, differences in the level of use by canoers and motor boaters was notable.

Table 3.3. Comparison of the Number of Anglers and Vessels Observed in 2011, 2005, and 2004

	Observed Number of Users and Percent of the Yearly Total						
				Motor			
Observation Year	Raft	Kayak	Canoe	Boat	Air Boat	Jet Ski	Angler
2011	32 (25%)	20 (18%)	9 (8%)	17 (15%)	3 (3%)	2 (2%)	32 (29%)
2005[1]	48 (24%)	27 (13%)	53 (26%)	7 (3%)	3 (2%)	0%	65 (32%)
2004[1]	52 (15%)	35 (11%)	133 (39%)	11 (3%)	3 (1%)	3 (1%)	102 (30%)

[1]Data obtained from Tom Paragi, former Citizens Advisory Board member.

Gross comparisons between motorized and non-motorized use levels show that motorized use levels in 2011 were approximately 15% higher than levels observed in 2004 and 2005 (Figure 3.5). This is likely attributed to variations in the locations and frequency of sampling. In 2011, more frequent sampling occurred at 3rd bridge which proved to be the most popular put-in/take-out location for motorized and non-motorized river users alike. Analysis of the 2011 use data excluding 3rd bridge produced very similar results (93% non-motorized and 7% motorized) to those reported in 2004 and 2005.

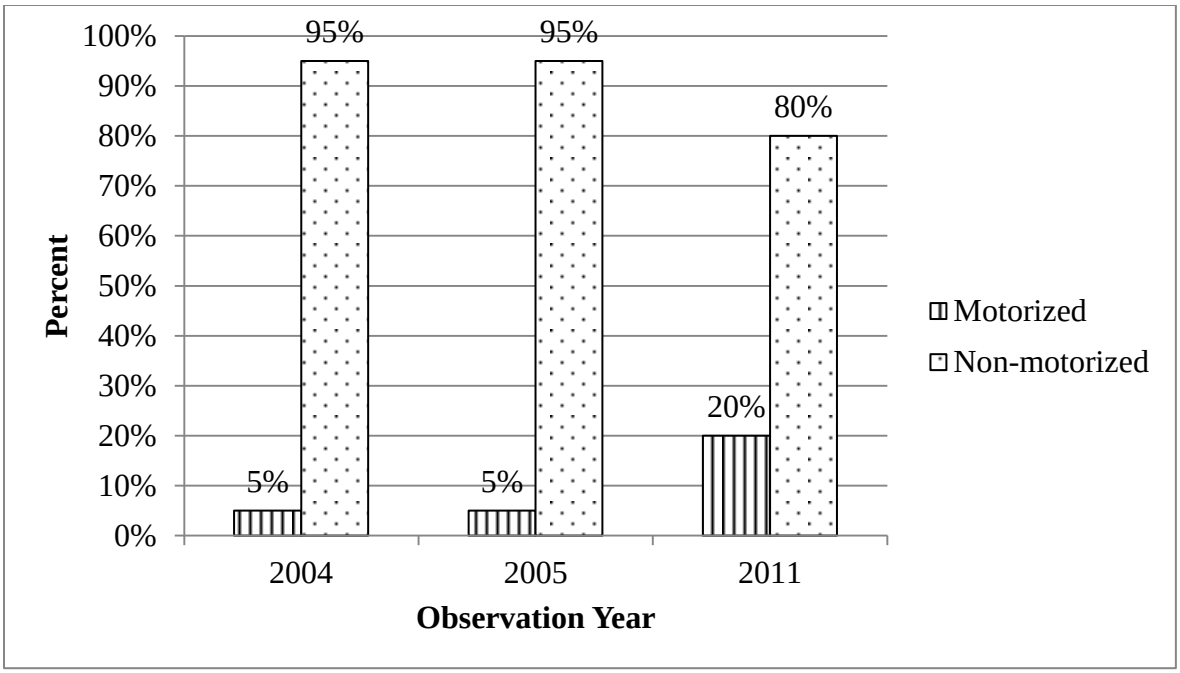

Figure 3.5. Comparison of motorized and non-motorized use observations 2004, 2005, and 2011.

3.4.4. Popular River Segments

Respondents were presented with a list of river segments and asked to identify the segments they used on the day of their visit. The Middle Fork of the Chena River was the most popular destination among motorized users. The vast majority of the motorized users surveyed (92%) reported travelling from 3rd bridge to the Middle Fork and 8% reported travelling between 2nd bridge and the Middle Fork (Table 3.4). The respondents who traveled from 2nd bridge to the Middle Fork reported doing so because of high water conditions and concerns about having enough clearance to navigate under 3rd bridge. The majority of non-motorized river use occurred between 3rd bridge and Rosehip. The most popular river section for non-motorized users was 3rd to 2nd bridge (81%) followed by 2nd to 1st bridge (54%). Anglers reported fishing primarily between 4th and 1st bridges.

Table 3.4. Summary of the River Segments Used by Non-motorized Users, Motorized Users and Anglers

River Segments[1]	Use Type		
	Non-motorized	Motorized	Anglers
Northern Boundary to 4th Bridge	2%	0%	0%
4th to 3rd Bridge	2%	0%	25%
3rd Bridge to Middle Fork	2%	92%	20%
3rd Bridge to 2nd Bridge	81%	0%	25%
2nd Bridge to 1st Bridge	54%	0%	20%
1st Bridge to 31.6 Mile	23%	0%	5%
31.6 Mile to Rosehip	14%	0%	0%
28 Mile to South Fork	0%	0%	5%
2nd Bridge to Middle Fork	0%	8%	0%
2nd Bridge to 28 Mile	2%	0%	0%
28 Mile to 50 Mile	0%	0%	10%

[1]Respondents had the option of choosing multiple river segments.

3.4.5. Trip Length

More than half (52%) of respondents reported making a day trip to the area (Table 3.5). Another 24% reported making an overnight trip. A total of 9% of users reported staying 4 or more nights. This group was primarily comprised of motorized users who were using the area for hunting purposes.

Table 3.5. Summary of Trip Length as Reported by Non-motorized Users, Motorized Users, and Anglers

	Day Trip	1 Night	2 Nights	3 Nights	4 Nights	5 or More Nights
Non-motorized	25%	17%	3%	4%	0%	0%
Motorized	10%	6%	4%	1%	2%	6%
Anglers	17%	1%	3%	0%	0%	1%
Total	52%	24%	10%	5%	2%	7%

3.4.6. Perceived Crowding

Survey respondents were asked to assess how crowded they felt during their visit to the CRSRA. Crowding is defined as a negative evaluation of the density of other users. Responses were measured on a 9-point scale with the following points labelled: not at all crowed (1-2), slightly crowed (3-4), moderately crowded (5-7), and extremely crowded (8-9) (Table 3.6).

Table 3.6. Recreational River Users Evaluations of Crowding in the CRSRA

Crowding Evaluation	% of Respondents
Not at all Crowded	41
Slightly Crowded	31
Moderately Crowded	17
Extremely Crowded	11
Total	100

Approximately 41% of those surveyed reported not being crowded. The remaining 59% reported some level of crowding ranging from slightly to extremely crowded and therefore, the level of crowding experienced by respondents falls within the high-normal range of the crowding evaluation table created by Shelby, Vaske, and Heberlein (1989) (Table 3.7). When compared to other rivers in Alaska, the level of crowding reported for the section of the Chena River that flows through the CRSRA is comparable to the Gulkana River "All users – Sourdough Segment" (Table 3.8). Of the 59% of respondents that reported some level of crowding, 31% reported only feeling slightly crowded. When combined with the no crowding group, it shows that 72% of respondents experienced little to no crowding at all.

Table 3.7. Range of the Various Levels of Crowding and Management Options

% Feeling Crowded	Capacity Judgment	Comment
0-35%	No Crowding	Crowding usually limited by management or situational factors.
35-50%	Low Normal	Problem situation does not exist at this time.
50-65%	High Normal	Should be studied if increased use is expected, allowing management to anticipate problems.
65-80%	Over Capacity	Studies & management necessary to preserve experiences.
80-100%	Greatly Over Capacity	Manage for high-density recreation.

Source: Shelby, Vaske, & Heberlein (1989).

Table 3.8. Comparisons of Crowding Levels on Alaska Rivers[1]

% Feeling Crowded	Resource	Population/Comments
65	Kenai River, Ak	Lower river bank anglers on low use days
64	Talachulitna River, Ak	All users
63	Gulkana River, Ak	All users – Lower Main Stem
62	Kenai River, Ak	Middle river bank anglers
60	Gulkana River, Ak	All users – Sourdough Segment
60	Kanektok River, Ak	Guide camp users
59	Kanektok River, Ak	All users
55	Kenai River, Ak	Middle River driftboaters on low use days
54	Gulkana River, Ak	All users – Upstream Confluence Segment
53	Goodnews River, Ak	Guided users
53	Kanektok River, Ak	Guided users
52	Goodnews River, Ak	Non-floaters
51	Gulkana River, Ak	All users – Upper Main Stem
51	Kroto Creek (Deshka), Ak	All users

[1]As defined by Doug Whittaker, Jerry Vaske, and Tara Williams in a report for the Bureau of Land Management published in 2000.

3.4.7. Evaluation of Conflict

Conflict between motorized and non-motorized recreational river users is occurring in the CRSRA. The conflict is asymmetrical with non-motorized users reporting a greater level of conflict than motorized users. For example, of the four problem behaviors presented to motorized users, 16-28% reported a conflict and of the five behaviors presented to non-motorized users, 60-67% reported a conflict (Table 3.9). Of the conflict reported by non-motorized users, gender was an influential factor with 61%-67% of women reporting a conflict compared with 44% - 50% of men. In-state residents were more likely to report a conflict than respondents from out-of-state. This was true across all the conflict behaviors available for comparison. The differences in conflict evaluations were most notable for non-motorized users, with 53% - 58% of in-state residents reporting conflict compared to 17% - 25% of out-of-state residents.

Interpersonal conflict or conflict associated with a negative interaction with a non-motorized user was more dominant for motorized users; with passing too closely and travelling out of control being of the greatest concern. For non-motorized users, a plurality of the conflict reported (21% to 44%) was related to social values, i.e., conflict that occurs between users who do not share the same values/norms and focuses on perceived conflict in the absence of direct interaction between users. Where comparisons were possible, conflict that included both interpersonal and social values accounted for 11% to 24% of non-motorized responses and only 8% of motorized users responses. A small but perceptible number of both users groups reported a latent-behavior conflict with other river users not yielding the right of way, passing too close, and traveling out of control. The level of interpersonal and latent-behavior conflict reported was influenced by how individuals responded to the questions about observed and problem

behaviors. Take for example the 4-point scale (not a problem, slight problem, moderate problem, and extreme problem) regarding perceived problem behaviors. For analysis purposes, the scaled responses were reclassified into “no problem” and “problem” consistent with past research, but it is worth noting that the vast majority of non-motorized users stated that they had no or only a slight problem with the behaviors presented (Table 3.10).

Table 3.9. Perceived Conflict Evaluations as Reported by Motorized and Non-Motorized Users of the CRSRA

	Motorized Users (n=26) (%)	Non-Motorized Users (n=63) (%)
Being rude and discourteous		
No conflict	73	33
Interpersonal conflict	19	11
Social values conflict		32
Interpersonal & social values	8	24
Latent-behavior conflict		
Not yielding right of way		
No conflict	72	35
Interpersonal conflict	16	8
Social values conflict	-	33
Interpersonal & social values	8	22
Latent-behavior conflict	4	2
Heard engine noise		
No conflict	-	35
Interpersonal conflict	-	9
Social values conflict	-	21
Interpersonal & social values	-	35
Latent-behavior conflict	-	-
Passing too close		
No conflict	84	37
Interpersonal conflict	4	6
Social values conflict	8	33
Interpersonal & social values		22
Latent-behavior conflict	4	2
Traveling out of control		
No conflict	81	40
Interpersonal conflict	7	3
Social values conflict	8	44
Interpersonal & social values	-	11
Latent-behavior conflict	4	2

Table 3.10. Problem Behaviors as Reported by Non-motorized Users Evaluating Motorized Users

	Motor boaters	Jet skiers	Air boaters
Being rude and discourteous			
No Problem	44	52	43
Slight Problem	12	4	14
Moderate Problem	6	5	4
Extreme Problem	1	2	1
Not yielding right of way			
No Problem	44	53	48
Slight Problem	15	6	10
Moderate Problem	3	1	3
Problem	1	3	1
Heard engine noise			
No Problem	36	46	37
Slight Problem	18	9	10
Moderate Problem	6	4	8
Problem	3	3	7
Passing too close			
No Problem	43	52	43
Slight Problem	14	3	10
Moderate Problem	3	4	6
Problem	3	3	3
Traveling out of control			
No Problem	52	56	50
Slight Problem	6	1	5
Moderate Problem	3	3	3
Problem	2	3	3

3.5. Conclusions and Management Recommendations

3.5.1. Conclusions

General motorized use of the river appears to be limited by the shallow, narrow, and twisting nature of the river and relatively limited to a few key areas such as the Middle Fork which serves as access to private inholdings and popular hunting areas. The nature of the river is likely to intensify interactions that do occur between motorized and non-motorized users.

Third bridge at 44 mile of Chena Hot Springs road may be the most popular river access point for users of motorized and non-motorized vessels. The water levels from this point are consistently high enough to support all types of water craft; although, if too high, motor boats and air boats can experience difficulties navigating their vessels under the bridge. Nevertheless, this access point along with the section of river between 3rd bridge and the Middle Fork is a concentration point for interactions between motorized and non-motorized users. This is particularly true during hunting season which ranges from early August to mid-September. During this time period, hunters regularly use the 3rd bridge put-in/take-out to launch motorized vessels. The primary destination for most motorized users is hunting grounds located along the Middle Fork. Although not documented while field data was being collected, observations made by me during personal trips to the area indicate that interactions between motorized and non-motorized river users are also likely to occur within the lower portion of the CRSRA between where the South Fork enters the Chena River and Rosehip Campground.

3.5.2. Management Recommendations

In the CRSRA, a combination of management strategies including education, outreach, and alternative infrastructure development has the greatest potential to reduce conflict among

river recreational users. Education and outreach efforts are the most cost and resource effective strategy to utilize. Messages should focus on broadening the public's general understanding about how the river within the CRSRA is currently used and managed, geographic and temporal use patterns, and the general reasons and motivations for using the area. In addition, voluntary "rules of engagement" should be developed to help alleviate conflict behaviors between different users when they interact on the river. Perhaps the most important rule of engagement to establish is, depending on the situation, what user should yield the right-of-way and how should they do it. Outreach could be accomplished by disseminating these messages via the park's website, in current and new information kiosks strategically located at key put-in/take-out locations, through public contacts, and by updating the park's current river brochure.

Another more costly option is to develop an alternative put-in/take-out location below or directly adjacent to the Middle Fork in order to minimize interactions between motorized and non-motorized users at 3rd bridge and along the river to the Middle Fork. Access directly adjacent to the Middle Fork could enhance access opportunities for motorized users during hunting season, limit interactions between motorized and non-motorized users, and help maintain quality recreational experiences for non-motorized users.

3.6 References

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CHAPTER 4 - General Conclusions

This study examined interpersonal conflict and social values conflict among motorized and non-motorized recreational river users in the Chena River State Recreation Area (CRSRA) east of Fairbanks, Alaska. Conflict was evaluated to inform park managers about the type, level, and distribution of conflict among river recreational users. The method used to assess social values conflict in this study relied on a direct, non-behavior based approach and resulted in notable differences when compared to previous methods to assess social values conflict.

Previous methodologies for operationalizing social values conflict are not conceptually clear and can result in individuals being classified into the wrong conflict typology. This is because measuring conflict via the evaluation of specific behaviors as problems might understate the prevalence of social values conflict and overestimate evaluations of no conflict. In some situations, the expression of a problem with a behavior in the absence of witnessing the event might be related to the behavior ("latent-behavior conflict") as opposed to social values conflict. In such a situation, the conflict would be more closely aligned with interpersonal conflict. Correctly identifying conflict as interpersonal or social values is crucial to selecting the most appropriate management response.

Conflict between motorized users and non-motorized users of the CRSRA, including anglers, was predicted to result from differences in social values between groups who do not share the same norms or values. In addition, conflict was anticipated to be asymmetrical in nature with more non-motorized users expressing conflict with motorized users than motorized users would of non-motorized users. The concepts and expected outcomes just discussed were researched using an onsite survey of recreational river users to measure the presence, type, and

distribution of conflict. The methods of research were based on the framework developed by Vaske, Needham, and Cline (2007) to measure interpersonal versus social values conflict. The framework was modified by introducing a new conflict typology to differentiate between social values conflict and latent problem behaviors. In addition, a non-behavior based measure of social values conflict was used in order to address the conceptual problems discussed above. A conflict typology with five possible outcomes was produced: (a) no conflict, (b) interpersonal conflict, (c) social values conflict, (d) interpersonal and social values conflict, and (e) latent-behavior conflict.

My research findings uncovered a mostly one-way or asymmetrical nature to conflict in the CRSRA, with reports of conflict much more pervasive among non-motorized users as opposed to motorized users who rarely reported experiencing any conflict at all. Among non-motorized users, social values conflict was the primary type reported. Traditional evaluations of social values conflict are heavily dependent on behaviors. For example, recreational users that do not observe a behavior but evaluate it as a problem are seen as having a social values conflict. This research challenged the utility of relying on behavior-based approaches to measure social values conflict and highlighted discrepancies in how respondents are categorized into the no conflict and social values conflict group when behavior and non-behavior based measures of social values conflict are used. It demonstrated that a person can experience social values conflict irrespective of the behaviors of another and whether or not they perceive the behaviors to be a problem. It also revealed that behavior-based methods of assessing social values conflict can result in an overestimation of the no conflict group when social values are an issue. Future studies should focus on applying a direct, non-behavior-based measure to assess social values

conflict and seek to understand why a person may be bothered by the presence of another user group in the area.

Latent-behavior conflict was minimal but detectable in the CRSRA. This finding lends support for including the latent-behavior conflict classification in the conflict typology table and highlights the need to differentiate between those who are merely expressing a problem with an un-witnessed behavior from respondents who are philosophically opposed to the presence of another user group because of differences in values and/or norms. It can also serve as an early indicator of more serious conflict that could manifest itself in the future. It would be useful to measure latent-behavior conflict within a group of like users as it is more likely to be an issue between recreational users that share similar norms and/or values.

In the CRSRA, a combination of management strategies has the greatest potential to reduce conflict among river recreational users. Education efforts could reduce both social values conflict and interpersonal conflict by broadening general understanding among users, dispelling myths, and communicating established rules of engagement. Alternative management strategies such as creating an alternative put-in at a strategic location could enhance access opportunities for motorized users during hunting season, limit interactions between motorized and non-motorized users, and maintain quality recreational experiences for non-motorized users.

The generalizability of the information obtained in this study is restricted by the small sample size, limited sampling locations, and sampling only on weekends. In addition, only a handful of respondents identified a "latent-behavior conflict" which begs the question of whether it can be attributed to response errors. Future investigations that measure social values conflict could benefit from measuring the strength of the social values conflict. In addition, learning more

about the specific beliefs people have regarding why another user group may be bothering them would help managers create more specific information for outreach efforts to reduce conflict potential.

From a management perspective, social values conflict in the CRSRA might be mitigated through information and outreach efforts that describe the use patterns of key user groups and the rationale behind management decisions made for the area. Detailed information about river protocols could also be developed and disseminated to help alleviate interpersonal and latent-behavior conflict between user groups. For example, information regarding when to yield the right of way could be effective at decreasing problem behaviors and reducing conflict. Since conflict was found to be fairly pervasive, at least among non-motorized users, zoning could be a good tool to help reduce interactions between different users groups and help to maintain quality recreational experiences for multiple user groups.

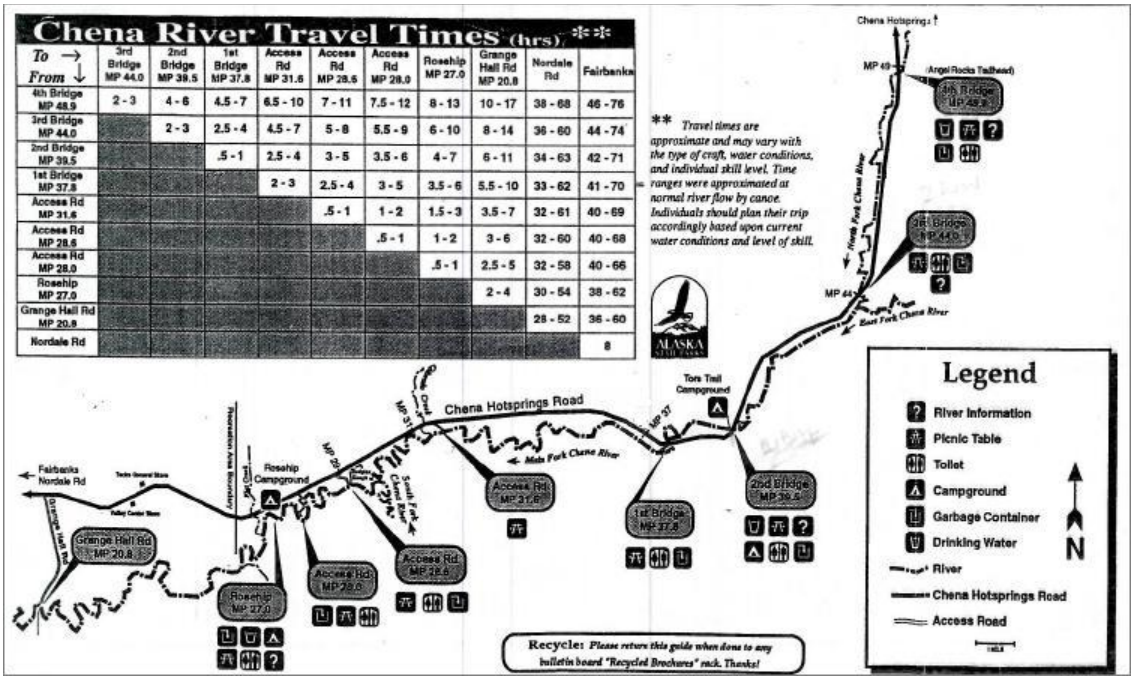
4.1.References

Vaske, J. J., Needham, M.D., & Cline, R.C., Jr. (2007). Clarifying interpersonal and social values conflict among recreationists. *Journal of Leisure Research*, *39*, 182-195.

List of Appendices

Appendix A - Angler Elicitation Survey

This survey is being conducted to learn more about the features that affect your visits to the Chena River State Recreation Area (CRSRA). Your responses will help determine topics to be studied in a future survey of recreational river use in the CRSRA. Thank you for taking the time to fill out this survey!



* For any question that does not apply please write "DOES NOT APPLY" in the space available

1. What segments of the river within the CRSRA are most important to you? (please illustrate on map above or write in response below e.g. 2nd bridge to 3rd bridge)
2. What type of fishing do you like to do in the Chena River State Recreation Area? (please describe)

3. How do you access fishing spots? (please check all that apply)

    ☐ From Shore

    ☐ Wadding

    ☐ Using a motorized boat

    ☐ Using a non-motored boat

4. If float fishing, what put-in and take-out locations do you regularly use? (please illustrate on map above or write in response below e.g. 2nd bridge)

5. During what month are you most likely to fish on the river within the CRSRA?

6. On average how frequently do you encounter motorized boaters while fishing in the CRSRA? (please check one)

    ☐ Never

    ☐ Rarely

    ☐ Occasionally

    ☐ Frequently

    ☐ Very Frequently

7. Have you ever experienced problems with motorized river users while fishing in the CRSRA? (if yes please describe)

8. Considering all past visits how frequently do you encounter non-motorized boaters while fishing in the CRSRA?

    ☐ Never
    ☐ Rarely
    ☐ Occasionally
    ☐ Frequently
    ☐ Very Frequently

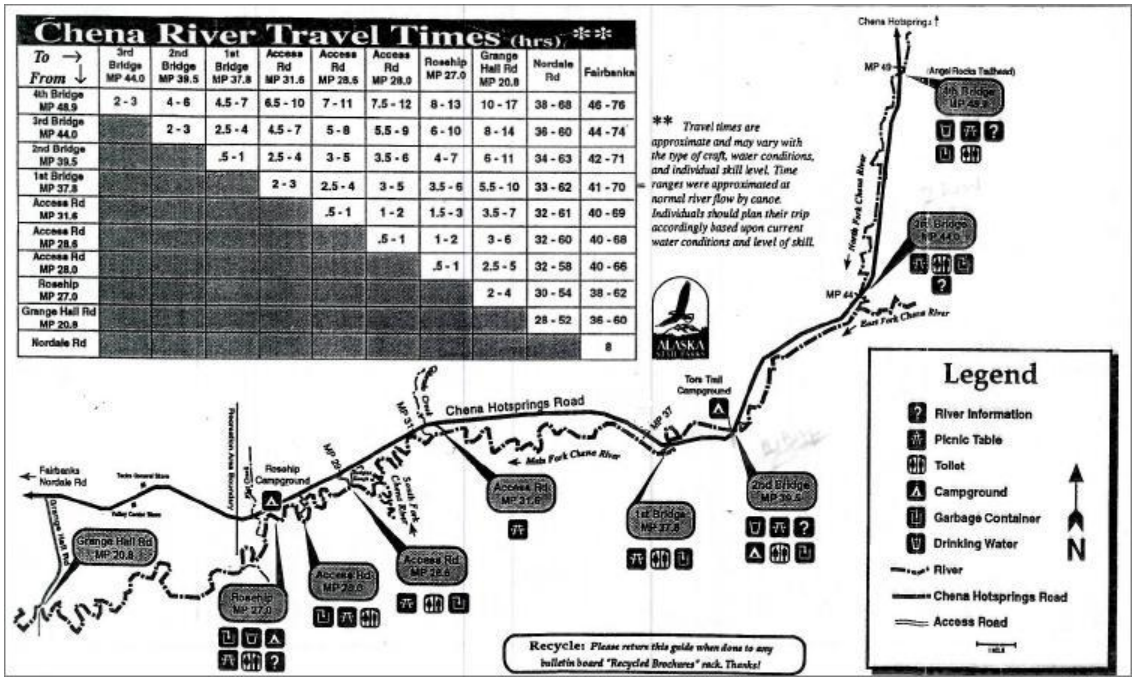
9. Have you ever experienced problems with non-motorized boaters while fishing in the CRSRA (if yes please describe)
10. Considering all past visits, how frequently do you encounter other anglers while fishing in the CRSRA?

    - ☐ Never
    - ☐ Rarely
    - ☐ Occasionally
    - ☐ Frequently
    - ☐ Very Frequently

11. Have you ever experienced problems with other anglers while fishing in the CRSRA? (if yes please describe)
12. Have you ever experienced problems with any other groups not already discussed while fishing in the CRSRA? (if yes please describe)
13. What day(s) of week do you generally visit the CRSRA?
14. Feel free to make additional comments regarding summer river use in the CRSRA below.

Appendix B - Motorized Elicitation Survey

This survey is being conducted to learn more about the features that affect your visits to the Chena River State Recreation Area (CRSRA). Your responses will help determine topics to be studied in a future survey of recreational river use in the CRSRA. Thank you for taking the time to fill out this survey!



Chena River Travel Times (hrs)

To → / From ↓	3rd Bridge MP 44.0	2nd Bridge MP 39.5	1st Bridge MP 37.8	Access Rd MP 31.6	Access Rd MP 28.6	Access Rd MP 28.0	Rosehip MP 27.0	Grange Hall Rd MP 20.8	Nordale Rd	Fairbanks
4th Bridge MP 48.9	2 - 3	4 - 6	4.5 - 7	6.5 - 10	7 - 11	7.5 - 12	8 - 13	10 - 17	38 - 68	46 - 76
3rd Bridge MP 44.0		2 - 3	2.5 - 4	4.5 - 7	5 - 8	5.5 - 9	6 - 10	8 - 14	36 - 60	44 - 74
2nd Bridge MP 39.5			.5 - 1	2.5 - 4	3 - 5	3.5 - 6	4 - 7	6 - 11	34 - 63	42 - 71
1st Bridge MP 37.8				2 - 3	2.5 - 4	3 - 5	3.5 - 6	5.5 - 10	33 - 62	41 - 70
Access Rd MP 31.6					.5 - 1	1 - 2	1.5 - 3	3.5 - 7	32 - 61	40 - 69
Access Rd MP 28.6						.5 - 1	1 - 2	3 - 6	32 - 60	40 - 68
Access Rd MP 28.0							.5 - 1	2.5 - 5	32 - 58	40 - 66
Rosehip MP 27.0								2 - 4	30 - 54	38 - 62
Grange Hall Rd MP 20.8									28 - 52	36 - 60
Nordale Rd										8

** *Travel times are approximate and may vary with the type of craft, water conditions, and individual skill level. Time ranges were approximated at normal river flow by canoe. Individuals should plan their trip accordingly based upon current water conditions and level of skill.*

* For any question that does not apply please write "DOES NOT APPLY" in the space available

1. What segments of the river within the CRSRA are most important to you? (please illustrate on map above or write in response below e.g. 2nd bridge to 3rd bridge)
2. What put-in and take-out locations do you regularly use? (please illustrate on map above or write in response below e.g. 2nd bridge)

3. What type of boating do you most frequently participate in at the CRSRA? (e.g. Jet Boating, Air Boating, ect…)
4. During what month are you most likely to boat on the river within the CRSRA?
5. On average how frequently do you encounter other motorized boaters while floating in the CRSRA? (please check one)

    ☐ Never

    ☐ Rarely

    ☐ Occasionally

    ☐ Frequently

    ☐ Very Frequently

6. Have you ever experienced problems with other motorized river users while boating in the CRSRA? (if yes please describe)
7. Consider all past visits how frequently do you encounter non-motorized boaters while floating in the CRSRA? (please check one)

    ☐ Never
    ☐ Rarely
    ☐ Occasionally
    ☐ Frequently
    ☐ Very Frequently

8. Have you ever experienced problems with non-motorized boaters while boating in the CRSRA (if yes please describe)

9. Considering all past visits, how frequently do you encounter anglers while boating in the CRSRA? (please check one)

    - ☐ Never
    - ☐ Rarely
    - ☐ Occasionally
    - ☐ Frequently
    - ☐ Very Frequently

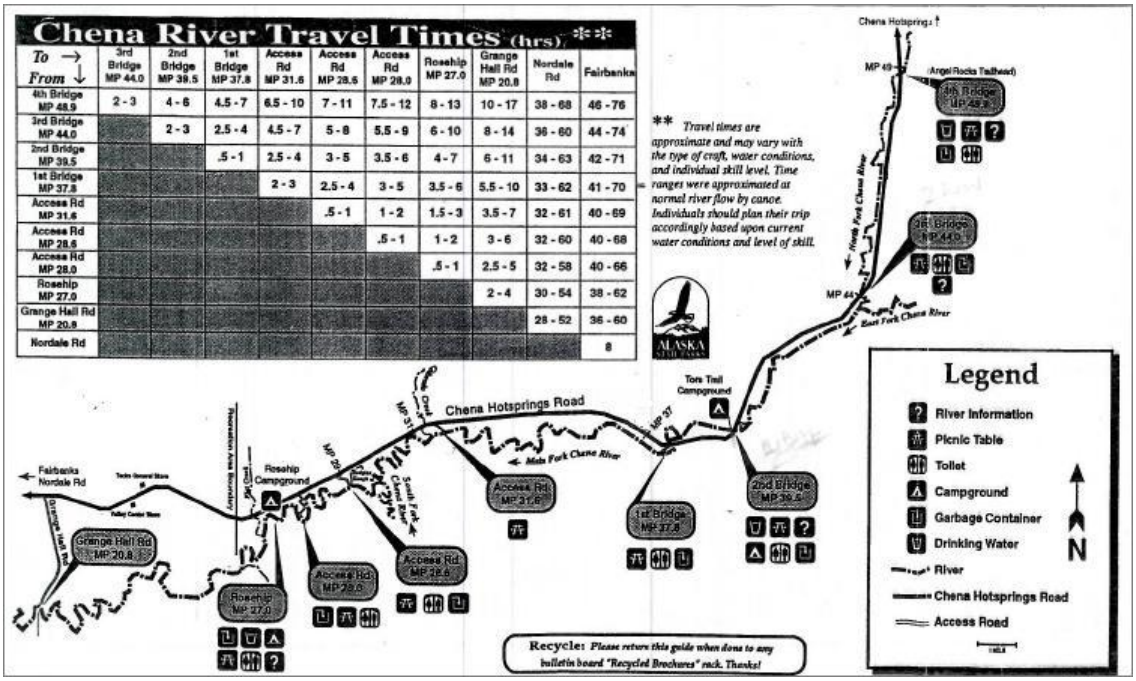
10. Have you ever experienced problems with anglers while boating in the CRSRA? (if yes please describe)
11. Have you ever experienced problems with any other groups not already discussed while boating in the CRSRA? (if yes please describe)
12. What is generally your primary reason for boating within the Chena River State Recreation Area? (please check one)

    - ☐ Travel to private in-holding or leased land
    - ☐ Boating for recreation
    - ☐ Fishing
    - ☐ Hunting
    - ☐ Other_____

13. What day(s) of week do you generally visit the CRSRA?
14. Feel free to make additional comments regarding summer river use in the CRSRA below.

Appendix C - Non-motorized Elicitation Survey

This survey is being conducted to learn more about the features that affect your visits to the Chena River State Recreation Area (CRSRA). Your responses will help determine topics to be studied in a future survey of recreational river use in the CRSRA. Thank you for taking the time to fill out this survey!



* For any question that does not apply please write "DOES NOT APPLY" in the space available

1. What segments of the river within the CRSRA are most important to you? (please illustrate on map above or write in response below e.g. 2nd bridge to 3rd bridge)
2. What put-in and take-out locations do you regularly use? (please illustrate on map above or write in response below e.g. 2nd bridge)

3. What type of boating do you most frequently participate in at the CRSRA? (e.g. rafting, canoeing, ect…)
4. During what month are you most likely to boat on the river within the CRSRA?
5. On average how frequently do you encounter motorized boaters while floating in the CRSRA? (please check one)

    ☐ Never

    ☐ Rarely

    ☐ Occasionally

    ☐ Frequently

    ☐ Very Frequently

6. Have you ever experienced problems with motorized river users while boating in the CRSRA? (if yes please describe)
7. Consider all past visits how frequently do you encounter other non-motorized boaters while floating in the CRSRA? (please check one)

    ☐ Never
    ☐ Rarely
    ☐ Occasionally
    ☐ Frequently
    ☐ Very Frequently

8. Have you ever experienced problems with other non-motorized boaters while boating in the CRSRA (if yes please describe)

9. Considering all past visits, how frequently do you encounter anglers while floating in the CRSRA? (please check one)

    - ☐ Never
    - ☐ Rarely
    - ☐ Occasionally
    - ☐ Frequently
    - ☐ Very Frequently

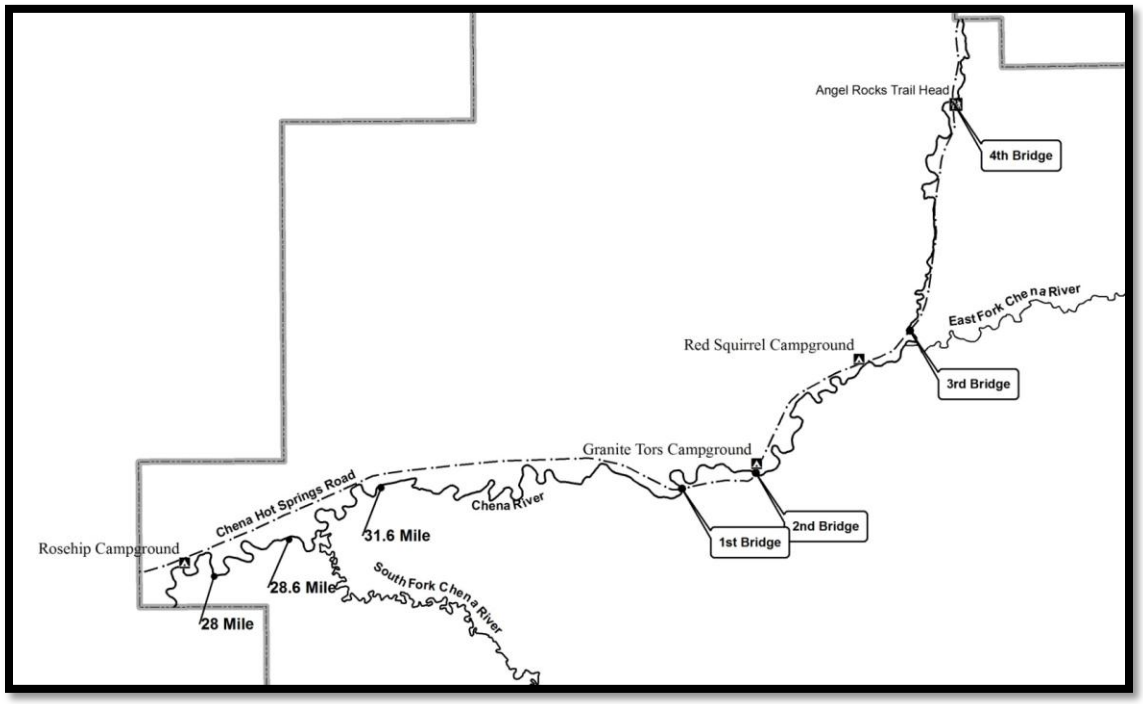
10. Have you ever experienced problems with anglers while boating in the CRSRA? (if yes please describe)
11. Have you ever experienced problems with any other groups not already discussed while boating in the CRSRA? (if yes please describe)
12. What is generally your primary reason for boating within the CRSRA? (please check one)

    - ☐ Travel to private in-holding or leased land
    - ☐ Boating for recreation
    - ☐ Fishing
    - ☐ Hunting
    - ☐ Other_____

13. What day(s) of week do you generally visit the CRSRA?
14. Feel free to make additional comments regarding summer river use in the CRSRA below.

Appendix D - Final Survey

This survey is being conducted to learn more about recreational river use in the Chena River State Recreation Area (CRSRA). Thank you for taking the time to fill out this survey!



↑North

1) What primary **river** recreational activity did you participate in today? (check one)
   - ☐ Fishing
   - ☐ Jet Boating
   - ☐ Air Boating
   - ☐ Jet Skiing
   - ☐ Canoeing
   - ☐ Rafting
   - ☐ Kayaking
   - ☐ Other _____

2) Did you participate in any other recreational activities today? (check all that apply)
   - ☐ Overnight Camping
   - ☐ Picnicking
   - ☐ Hiking
   - ☐ Motorized Boating
   - ☐ Non-Motorized Boating
   - ☐ Fishing
   - ☐ Berry Picking
   - ☐ Hunting
   - ☐ ATV riding

☐ Other_____

3) Which of the following river segments did you use today? (check all that apply)(reference map on cover page)
   - ☐ Northern Boundary to 4th Bridge
   - ☐ 4st Bridge to 3rd Bridge
   - ☐ 3rd Bridge to East Fork
   - ☐ 3rd Bridge to 2nd Bridge
   - ☐ 2nd Bridge to 1st Bridge
   - ☐ 1st Bridge to 31.6 Mile
   - ☐ 31.6 Mile to Rosehip Campground
   - ☐ 28 Mile to South Fork
   - ☐ Other_____

4) Please specify the length of this visit. (check one)
   - ☐ Day trip
   - ☐ 1 night
   - ☐ 2 nights
   - ☐ 3 nights
   - ☐ 4 nights
   - ☐ 5 or more nights

5) How many years have you been coming to the CRSRA_____? ←**enter here**

6) Considering all past visits, on average how many times do you visit the CRSRA during the summer? (check one)
   - ☐ 1 time
   - ☐ 2-3 times
   - ☐ 4-5 times
   - ☐ 6-10 times
   - ☐ > 10 times

7) How many people are in your group today_____? ←**enter here**

8) During your visits to the Chena River State Recreation Area , how often have you encountered:

	Never	Once or Twice	Some-times	Many Times	Almost Always
Fishermen	1	2	3	4	5
Motor boaters	1	2	3	4	5
Canoers	1	2	3	4	5
Jet skiers	1	2	3	4	5
Kayakers	1	2	3	4	5
Air boaters	1	2	3	4	5
Rafters	1	2	3	4	5

9) During your visits to the Chena River State Recreation Area , how often have you seen:

	Never	Once or Twice	Some-times	Many Times	Almost Always
Fishermen being rude and discourteous	1	2	3	4	5
Motor boaters being rude and discourteous	1	2	3	4	5
Canoers being rude and discourteous	1	2	3	4	5
Jet skiers being rude and discourteous	1	2	3	4	5
Kayakers being rude and discourteous	1	2	3	4	5
Air boaters being rude and discourteous	1	2	3	4	5
Rafters being rude and discourteous	1	2	3	4	5

10) During your visits to the Chena River State Recreation Area , how often have you seen:

	Never	Once or Twice	Some-times	Many Times	Almost Always
Fishermen not yielding the right-of-way on the water	1	2	3	4	5
Motor boaters not yielding the right-of-way on the water	1	2	3	4	5
Canoers not yielding the right-of-way on the water	1	2	3	4	5
Jet skiers not yielding the right-of-way on the water	1	2	3	4	5
Kayakers not yielding the right-of-way on the water	1	2	3	4	5
Air boaters not yielding the right-of-way on the water	1	2	3	4	5
Rafters not yielding the right-of-way on the water	1	2	3	4	5

11) During your visits to the Chena River State Recreation Area , how often have you heard:

	Never	Once or Twice	Some-times	Many Times	Almost Always
Engine noise from jet skis	1	2	3	4	5
Engine noise from motor boats	1	2	3	4	5
Engine noise from air boats	1	2	3	4	5

12) During your visits to the Chena River State Recreation Area , how often have you seen:

	Never	Once or Twice	Some-times	Many Times	Almost Always
Motor boaters passing too closely to others	1	2	3	4	5
Canoers passing too closely to others	1	2	3	4	5
Jet skiers passing too closely to others	1	2	3	4	5
Kayakers passing too closely to others	1	2	3	4	5
Air boaters passing too closely to others	1	2	3	4	5
Rafters passing too closely to others	1	2	3	4	5

13) During your visits to the Chena River State Recreation Area , how often have you seen:

	Never	Once or Twice	Some-times	Many Times	Almost Always
Motor boaters travelling out of control	1	2	3	4	5
Canoers travelling out of control	1	2	3	4	5
Jet skiers travelling out of control	1	2	3	4	5
Kayakers travelling out of control	1	2	3	4	5
Air boaters travelling out of control	1	2	3	4	5
Rafters travelling out of control	1	2	3	4	5

14) To what extent do you think each of the following are a problem when you visit the Chena River State Recreation Area:	No Problem	Slight Problem	Moderate Problem	Extreme Problem
Fishermen being rude and discourteous	1	2	3	4
Motor boaters being rude and discourteous	1	2	3	4
Canoers being rude and discourteous	1	2	3	4
Jet skiers being rude and discourteous	1	2	3	4
Kayakers being rude and discourteous	1	2	3	4
Air boaters being rude and discourteous	1	2	3	4
Rafters being rude and discourteous	1	2	3	4

15) If you responded that any of the above was a problem, please feel free to explain:

16) To what extent do you think each of the following are a problem when you visit the Chena River State Recreation Area:	No Problem	Slight Problem	Moderate Problem	Extreme Problem
Fishermen not yielding the right-of-way on the water	1	2	3	4
Motor boaters not yielding the right-of-way on the water	1	2	3	4
Canoers not yielding the right-of-way on the water	1	2	3	4
Jet skiers not yielding the right-of-way on the water	1	2	3	4
Kayakers not yielding the right-of-way on the water	1	2	3	4
Air boaters not yielding the right-of-way on the water	1	2	3	4
Rafters not yielding the right-of-way on the water	1	2	3	4

17) If you responded that any of the above was a problem, please feel free to explain:

18) To what extent do you think each of the following are a problem when you visit the Chena River State Recreation Area:	No Problem	Slight Problem	Moderate Problem	Extreme Problem
Engine noise from jet skis	1	2	3	4
Engine noise from motor boats	1	2	3	4
Engine noise from air boats	1	2	3	4

19) If you responded that any of the above was a problem, please feel free to explain:

20) To what extent do you think each of the following are a problem when you visit the Chena River State Recreation Area:	No Problem	Slight Problem	Moderate Problem	Extreme Problem
Motor boaters passing too closely to others	1	2	3	4
Canoers passing too closely to others	1	2	3	4
Jet skiers passing too closely to others	1	2	3	4
Kayakers passing too closely to others	1	2	3	4
Air boaters passing too closely to others	1	2	3	4
Rafters passing too closely to others	1	2	3	4

21) If you responded that any of the above was a problem, please feel free to explain:

22) To what extent do you think each of the following are a problem when you visit the Chena River State Recreation Area:

	No Problem	Slight Problem	Moderate Problem	Extreme Problem
Motor boaters travelling out of control	1	2	3	4
Canoers travelling out of control	1	2	3	4
Jet skiers travelling out of control	1	2	3	4
Kayakers travelling out of control	1	2	3	4
Air boaters travelling out of control	1	2	3	4
Rafters travelling out of control	1	2	3	4

23) If you responded that any of the above was a problem, please feel free to explain:

24) Please indicate whether you agree or disagree with these statements.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Just knowing **fishermen** are in the area bothers me.	1	2	3	4	5
Just knowing **motor boaters** are in the area bothers me.	1	2	3	4	5
Just knowing **air boaters** are in the area bothers me.	1	2	3	4	5
Just knowing **jet skiers** are in the area bothers me.	1	2	3	4	5
Just knowing **canoers** are in the area bothers me.	1	2	3	4	5
Just knowing **rafters** are in the area bothers me.	1	2	3	4	5
Just knowing **kayakers** are in the area bothers me.	1	2	3	4	5

25) During your visits to the Chena River State Recreation Area…

A) What percentage of your trips have you observed vehicle and ATV use on gravel bars?

0% 1-25% 26-50% 51-75% 76-100%

B) To what extent do you view this as a problem?

Not a Problem Slight Problem Moderate Problem Extreme Problem

26) Please indicate how crowded you felt the Chena River State Recreation Area was today. (circle one)

1 2 3 4 5 6 7 8 9

Not at all Crowded	Slightly Crowded	Moderately Crowded	Extremely Crowded

27) Please estimate the number of other groups you will tolerate per day before your trip is compromised_____.

28) Please estimate the number of other groups you saw during your visit today_____.

29) If you choose to avoid high use times or specific user groups, how do you modify your trip plans? (check all that apply)
    - ☐ Visit a different day of the week
    - ☐ Visit a different river segment
    - ☐ Visit at different time of day
    - ☐ Visit during a different time of year
    - ☐ Visit a different river
    - ☐ Make a shorter trip
    - ☐ Make a longer trip
    - ☐ Not concerned about high use times or specific user groups
    - ☐ Other_____

30) Have you reduced the average number of visits you make to the Chena River State Recreation Area during the summer because of a decline in trip quality? (check one)
    - ☐ No
    - ☐ Yes → please explain

31) To help determine residency please list your current U.S. mailing zip code or country of origin_____. ←**enter here**

32) What is your age_____? ←**enter here**

33) What is your gender? (check one)
    - ☐ Female
    - ☐ Male

Additional Comments:

Thank You for Completing This Survey

If you would like to receive a copy of this survey or final report please contact Michael Gibson by email at michaelgibson37@hotmail.com or by phone at 907-750-8672